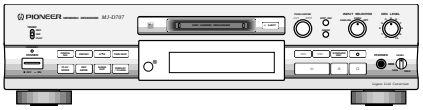
Service Manual

PIONEER®
The Art of Entertainment



ORDER NO.
RRV1963

MINIDISC RECORDER

MJ-D707
MJ-17D

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

Type	Model		Power Requirement	Remarks
	MJ-D707	MJ-17D		
KU	○	○	AC120V	
MY	○	—	AC220–230V	
MY/GR/FR	○	—	AC220–230V	

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1. SAFETY INFORMATION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.
Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING
This product contains lead in solder and certain electrical parts contain chemicals which are known to the state of California to cause cancer, birth defects or other reproductive harm.

Health & Safety Code Section 25249.6 – Proposition 65

NOTICE
(FOR CANADIAN MODEL ONLY)
Fuse symbols (fast operating fuse) and/or (slow operating fuse) on PCB indicate that replacement parts must be of identical designation.

REMARQUE
(POUR MODÈLE CANADIEN SEULEMENT)
Les symboles de fusible (fusible de type rapide) et/ou (fusible de type lent) sur CCI indiquent que les pièces de remplacement doivent avoir la même désignation.

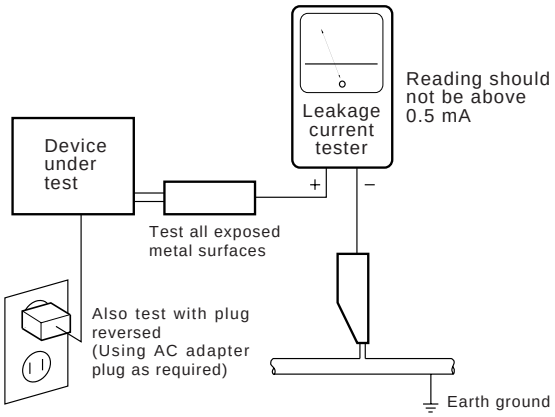
(FOR USA MODEL ONLY)

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60 Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5 mA.


Leakage current tester
Reading should not be above 0.5 mA
Device under test
+
–
Test all exposed metal surfaces
Also test with plug reversed (Using AC adapter plug as required)
Earth ground

AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage , etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.
The use of a substitute replacement component which does not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

IMPORTANT

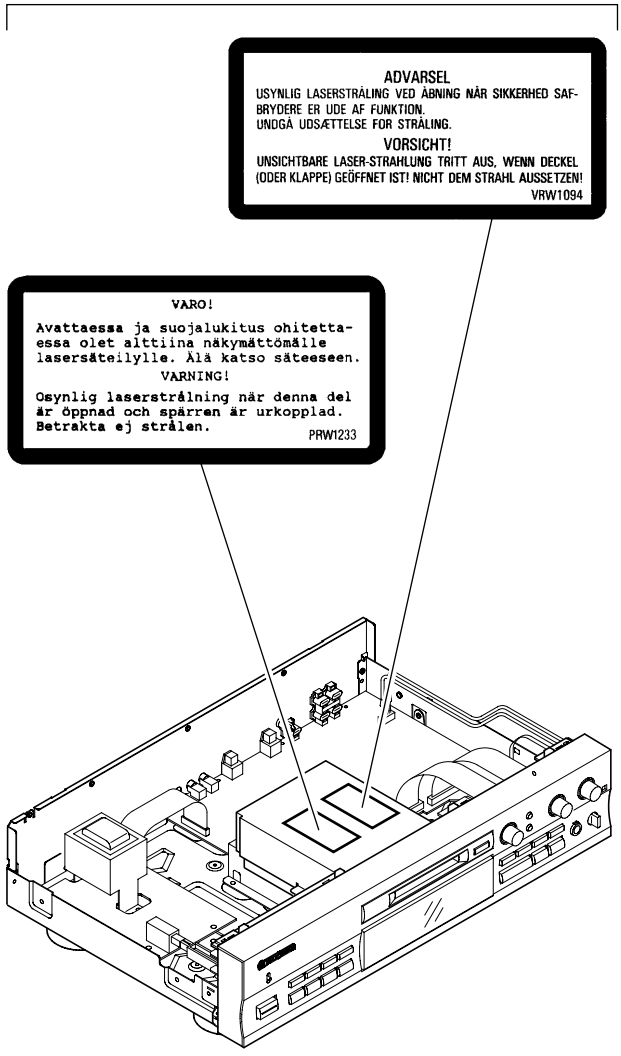
THIS PIONEER APPARATUS CONTAINS LASER OF CLASS 1.
SERVICING OPERATION OF THE APPARATUS SHOULD BE DONE BY A SPECIALLY INSTRUTED PERSON.

LASER DIODE CHARACTERISTICS

MAXIMUM OUTPUT POWER: 32 mw
WAVELENGTH: 785 nm

LABEL CHECK

MY and MY/GR/FR types


ADVARSEL
USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHED SAFBRYDERE ER UDE AF FUNKTION.
UNDGÅ UDSÆTTELSE FOR STRÅLING.
VORSICHT!
UNSICHTBARE LASER-STRAHLUNG TRITT AUS, WENN DECKEL (ODER KLAPPE) GEÖFFNET IST! NICHT DEM STRAHL AUSSETZEN!
VRW1094
VARO!
Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Älä katso säteeseen.
VARNING!
Osynlig laserstrålning när denna del är öppnad och spärren är urkopplad. Betrakta ej strålen.
PRW1233

Additional Laser Caution

Laser pick-up assembly
The output power at the objective lens of this assembly is 0.73 mW.

Control method of the current through a laser diode.
The resistor R105 on the CORD MAIN UNIT ASSY (For MD mechanism assembly) are for the limiting of current through a laser diode.

Control method of the laser output power
The laser pick-up assembly provide the photo-diodes and APC (Auto Power Control) circuit.
The photo-diode detect output of the laser diode then IC104 control the APC circuit according to the signal voltage of the photo-diode via IC101.
The Variable resistancer on the FPC in the Laser pick-up assembly can be adjusted the output level of Laser diode to fix the rated output level.

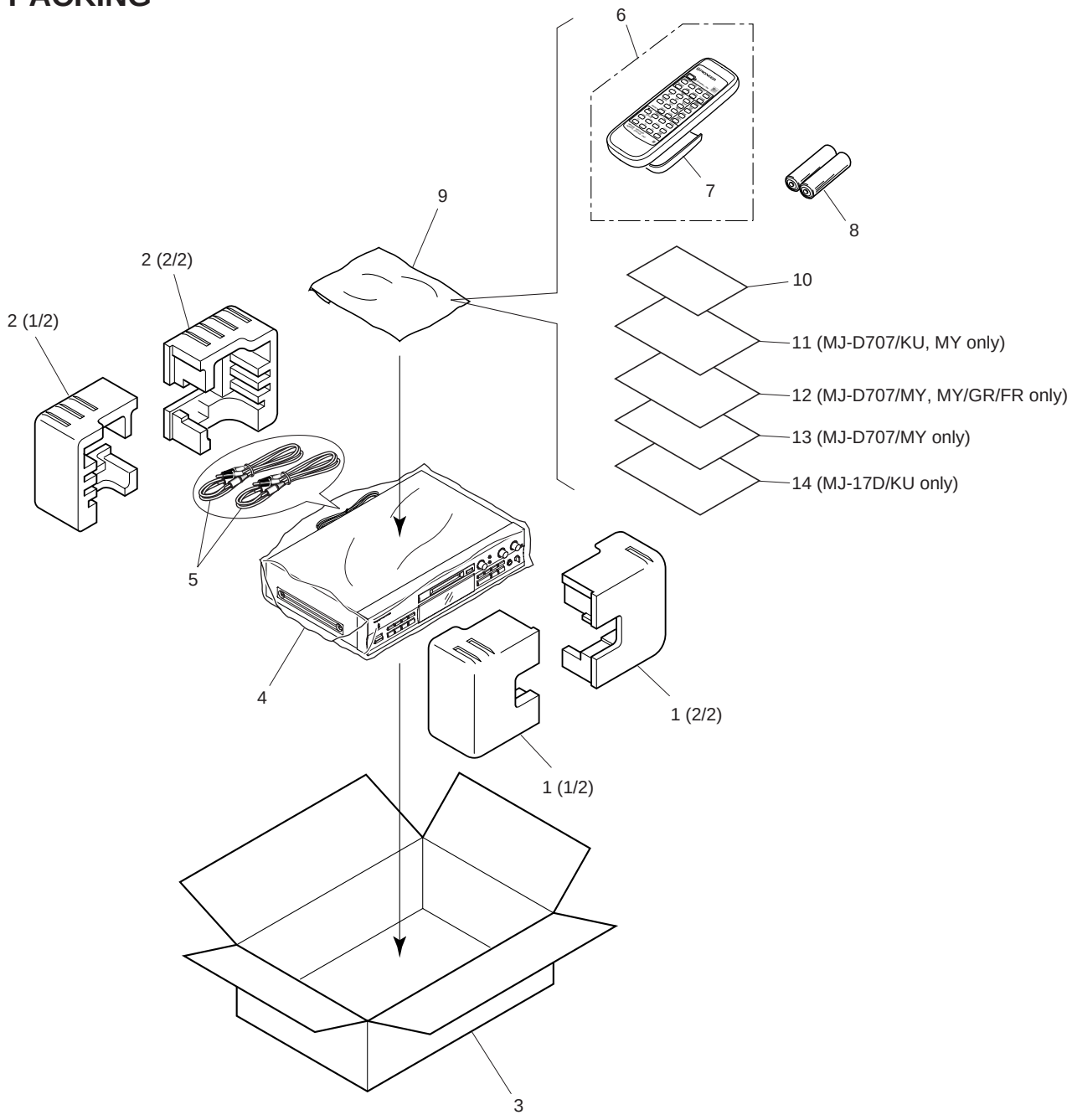
Laser Interlock Switch
The loading position detect switch S101 is set to " LOAD ON " (ON: low level, OFF: high level) position, IC104 get the " LOAD " signal, and hand the laser " LDON " signal to No. 9 terminal (LDON) of the Laser pick-up assembly.
Then a laser diode can be lighted exept when the level of signal "LOAD " is low.

* Refer to page 42.

2. EXPLODED VIEWS AND PARTS LIST

NOTES :
- *Parts marked by " NSP " are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Screw adjacent to ▼ mark on the product are used for disassembly.*

2.1 PACKING



(1) PACKING PARTS LIST

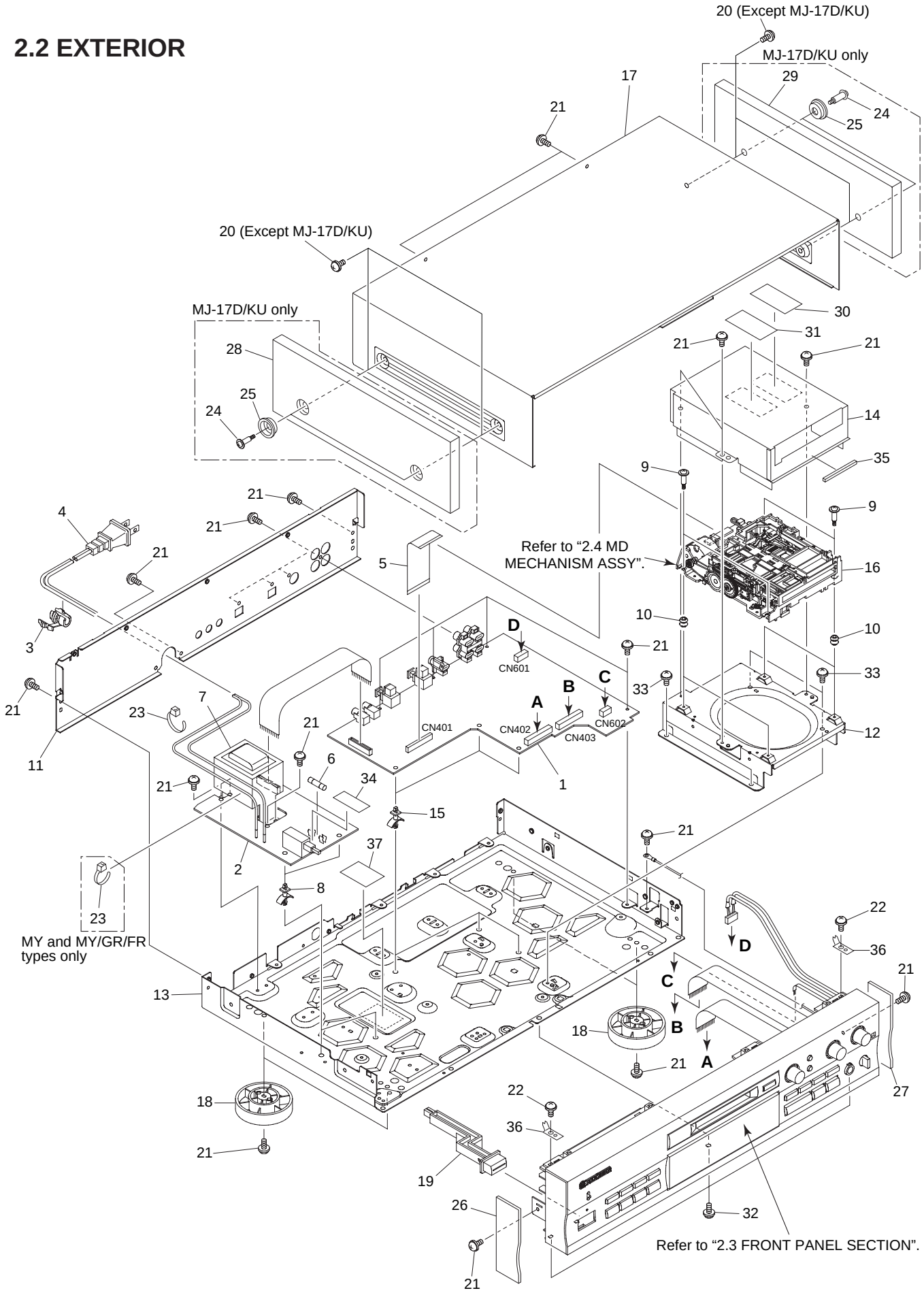
Mark	No.	Description	Part No.
	1	Protector (F)	RHA1238
	2	Protector (R)	RHA1239
	3	Packing Case	See Contrast table (2)
	4	Sheet (750 × 600 × 0.5)	Z23–007
	5	Audio Cord (L= 1m)	PDE1248
	6	Remote Control Unit (CU-MJ011)	RPX1131
	7	Battery Cover	RZN1156
NSP	8	Batteries (AA/R6P)	VEM–013
	9	Polyethylene Bag (0.03 × 230 × 340)	Z21–038
NSP	10	Warranty Card	See Contrast table (2)
	11	Operating Instructions	See Contrast table (2)
	12	Operating Instructions	See Contrast table (2)
	13	Operating Instructions	See Contrast table (2)
	14	Operating Instructions	See Contrast table (2)

(2) CONTRAST TABLE

MJ-D707/KU, MY, MY/GR/FR and MJ-17D/KU are constructed the same except for the following:

Mark	No.	Symbol and Description	Part No.				Remarks
			MJ-D707			MJ-17D	
			KU	MY	MY/GR/FR	KU	
	3	Packing Case	RHG1876	RHG1874	RHG1874	RHG1877	
NSP	10	Warranty Card	ARY1044	ARY7008	ARY7008	ARY1026	
	11	Operating Instructions (English/Spanish)	RRE1162	RRE1162	Not used	Not used	
	12	Operating Instructions (French/German)	Not used	RRD1198	RRD1198	Not used	
	13	Operating Instructions (Portuguese/Italian/Dutch/Swedish)	Not used	RRD1199	Not used	Not used	
	14	Operating Instructions (English)	Not used	Not used	Not used	RRB1185	

2.2 EXTERIOR


20 (Except MJ-17D/KU)
MJ-17D/KU only
17
29
24
25
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20 (Except MJ-17D/KU)
MJ-17D/KU only
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Refer to "2.4 MD MECHANISM ASSY".
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10
3
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D
CN601
21
33
33
B
C
A
CN401
CN402
CN403
CN602
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7
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37
2
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23
MY and MY/GR/FR types only
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D
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21
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26
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32
Refer to "2.3 FRONT PANEL SECTION".

(1) EXTERIOR PARTS LIST

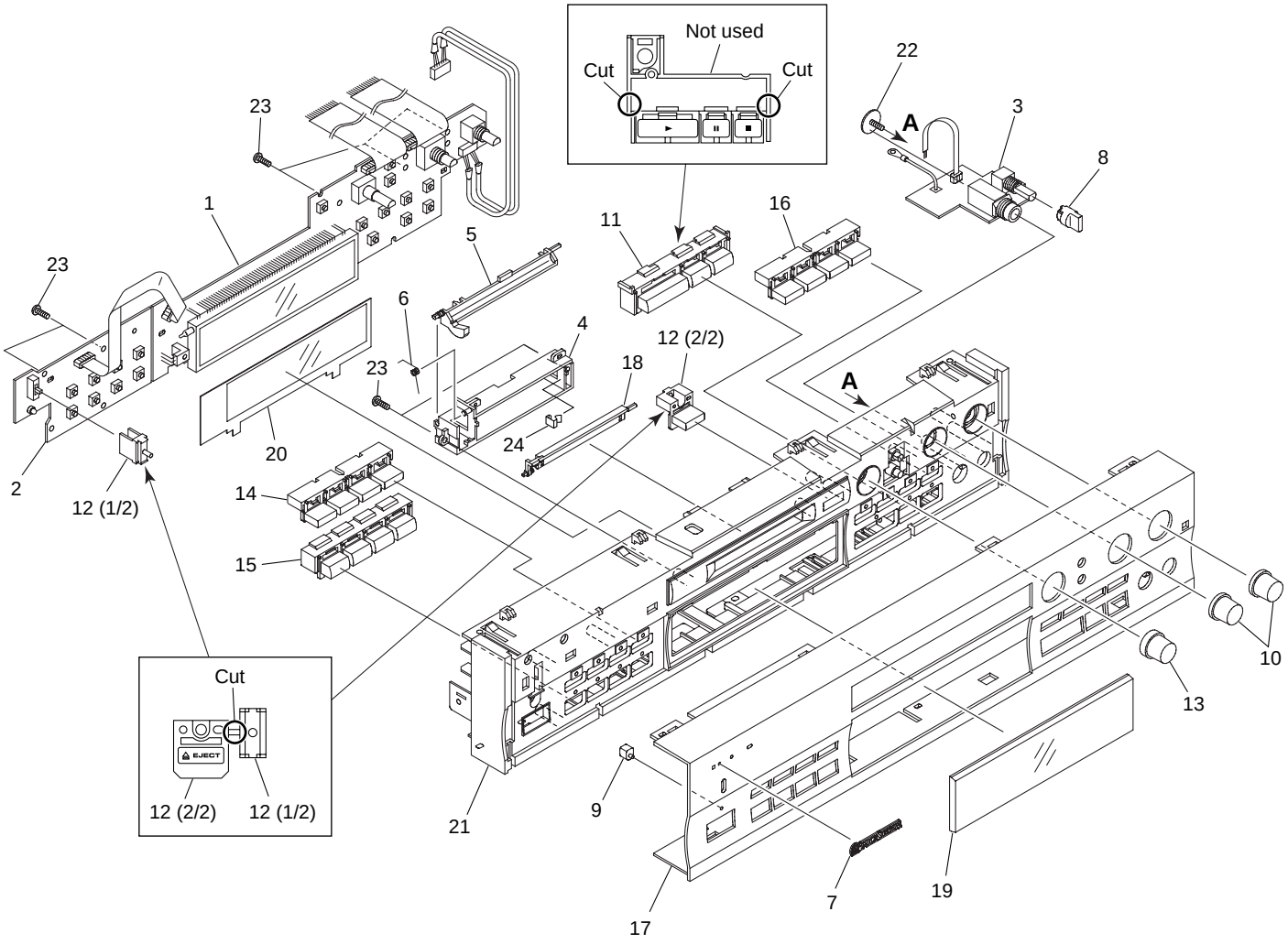
Mark	No.	Description	Part No.
	1	MAIN UNIT ASSY	See Contrast table (2)
	2	TRANS UNIT ASSY	See Contrast table (2)
⚠	3	Strain Relief	See Contrast table (2)
⚠	4	AC Power Cord	See Contrast table (2)
	5	Lead Card 30P	RDD1402
⚠	6	Fuse	See Contrast table (2)
⚠	7	Power Transformer	RTT1316
NSP	8	PCB Holder	PNW2100
	9	Float Screw	RBA1133
	10	Float Rubber	REB1328
	11	Rear Panel	See Contrast table (2)
	12	Mecha Angle	RNB1133
	13	Under Base	RNB1134
	14	Shield Case	RNB1139
NSP	15	PC Support	VEC1549
NSP	16	MD Mechanism Assy	RXA1773
	17	Bonnet	PYY1147
	18	Insulator	PNW2766
	19	POWER Button B	RAC2207
	20	Screw	See Contrast table (2)
	21	Screw	IBZ30P060FCC
	22	Screw	IBZ30P080FCC
	23	Binder	ZCA–SKB90BK
	24	Screw	See Contrast table (2)
	25	Wood Collar	See Contrast table (2)
	26	Gold Mole (L)	See Contrast table (2)
	27	Gold Mole (R)	See Contrast table (2)
	28	Side Wood (L)	See Contrast table (2)
	29	Side Wood (R)	See Contrast table (2)
	30	Caution Label	See Contrast table (2)
	31	Caution Label	See Contrast table (2)
	32	Screw	BBT30P080FCC
	33	Screw	RBA1132
	34	Fuse Label	See Contrast table (2)
	35	Case Spacer	REB1330
	36	Plate	VNE1164
	37	Fuse Caution Label	See Contrast table (2)

(2) CONTRAST TABLE

MJ-D707/KU, MY, MY/GR/FR and MJ-17D/KU are constructed the same except for the following:

Mark	No.	Symbol and Description	Part No.				Remarks
			MJ-D707			MJ-17D	
			KU	MY	MY/GR/FR	KU	
	1	MAIN UNIT ASSY	RWZ4309	RWZ4293	RWZ4293	RWZ4288	
	2	TRANS UNIT ASSY	RWZ4313	RWZ4297	RWZ4297	RWZ4292	
⚠	3	Strain Relief	CM–22C	CM–22B	CM–22B	CM–22C	
⚠	4	AC Power Cord	PDG1015	PDG1003	PDG1003	PDG1015	
⚠	6	Fuse (1A/125V)	REK1075	Not used	Not used	REK1075	
⚠	6	Fuse (500mAL250V)	Not used	REK1019	REK1019	Not used	
	11	Rear Panel	RNA2204	RNA2204	RNA2204	RNA2205	
	20	Screw	FBT40P080FZK	FBT40P080FZK	FBT40P080FZK	Not used	
	24	Screw	Not used	Not used	Not used	PBA1103	
	25	Wood Collar	Not used	Not used	Not used	PNW1238	
	26	Gold Mole (L)	Not used	Not used	Not used	RAH2865	
	27	Gold Mole (R)	Not used	Not used	Not used	RAH2866	
	28	Side Wood (L)	Not used	Not used	Not used	RMS1019	
	29	Side Wood (R)	Not used	Not used	Not used	RMS1020	
	30	Caution Label	Not used	RRW1233	RRW1233	Not used	
	31	Caution Label	Not used	VRW1094	VRW1094	Not used	
	34	Fuse Label	RRW1294	Not used	Not used	RRW1294	
	37	Fuse Caution Label	RRW–111	Not used	Not used	RRW–111	

2.3 FRONT PANEL SECTION



(1) FRONT PANEL SECTION PARTS LIST

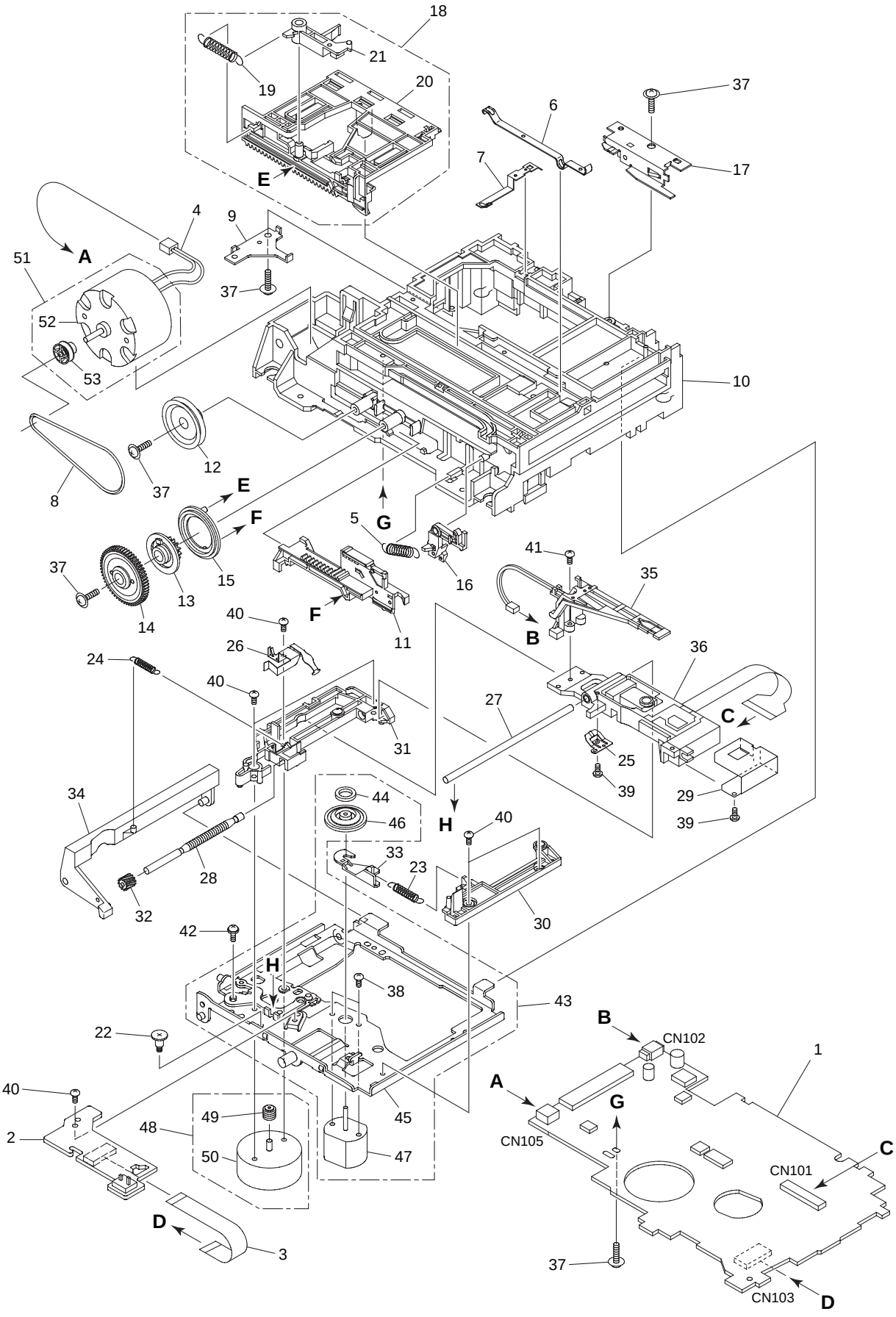
Mark	No.	Description	Part No.
	1	DISPLAY UNIT ASSY	See Contrast table (2)
	2	CONTROL UNIT ASSY	See Contrast table (2)
	3	HEADPHONE UNIT ASSY	See Contrast table (2)
	4	Door Holder	RAH2852
	5	Door Cam	RAH2853
	6	Door Spring	RBH1459
	7	Name Plate	AAM7004
	8	HEADPHONE Knob	PAC1707
	9	LED Lens	PNW2019
	10	VOL Knob	RAC2197
	11	PLAY Button B	RAC2204
	12	Slide Knob B	RAC2208
	13	JOG Knob B	RAC2210
	14	PLAY MODE Button B	RAC2212
	15	REC MODE Button B	RAC2214
	16	SEARCH Button B	RAC2216
	17	Front Panel	See Contrast table (2)
	18	Door	See Contrast table (2)
	19	Display Window	RAH2862
	20	FL Sheet	See Contrast table (2)
	21	Panel Stay B	RNT1250
	22	Screw	ABA7009
	23	Screw	PPZ30P100FMC
	24	Edge Guard	RBK1078

(2) CONTRAST TABLE

MJ-D707/KU, MY, MY/GR/FR and MJ-17D/KU are constructed the same except for the following:

Mark	No.	Symbol and Description	Part No.				Remarks
			MJ-D707			MJ-17D	
			KU	MY	MY/GR/FR	KU	
	1	DISPLAY UNIT ASSY	RWZ4310	RWZ4294	RWZ4294	RWZ4289	
	2	CONTROL UNIT ASSY	RWZ4311	RWZ4295	RWZ4295	RWZ4290	
	3	HEADPHONE UNIT ASSY	RWZ4312	RWZ4296	RWZ4296	RWZ4291	
	17	Front Panel	RAH2870	RAH2859	RAH2859	RAH2860	
	18	Door	RAH2861	RAH2861	RAH2861	RAH2851	
	20	FL Sheet	RAH2863	RAH2855	RAH2855	RAH2863	

2.4 MD MECHANISM ASSY

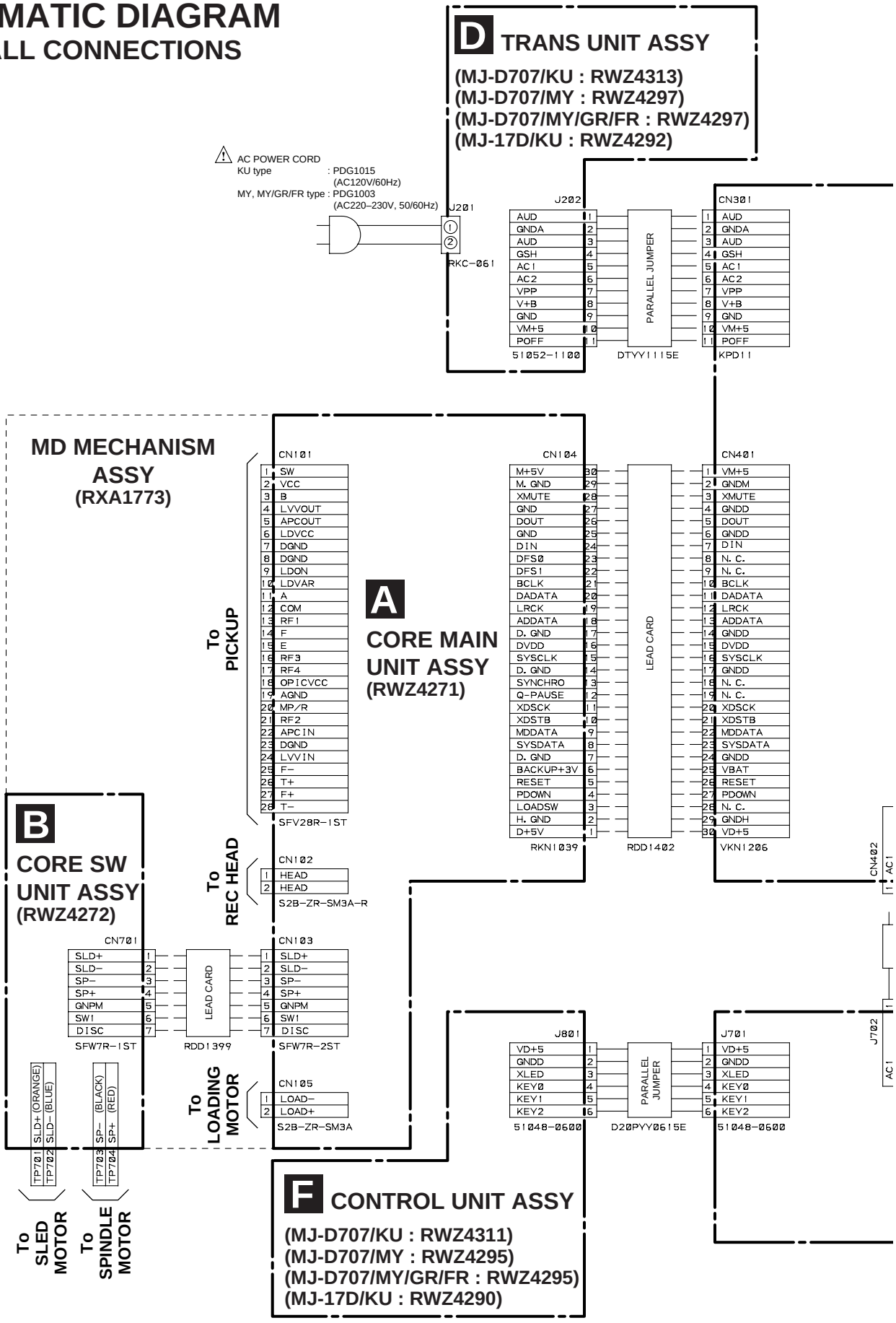


■ MD MECHANISM ASSY PARTS LIST

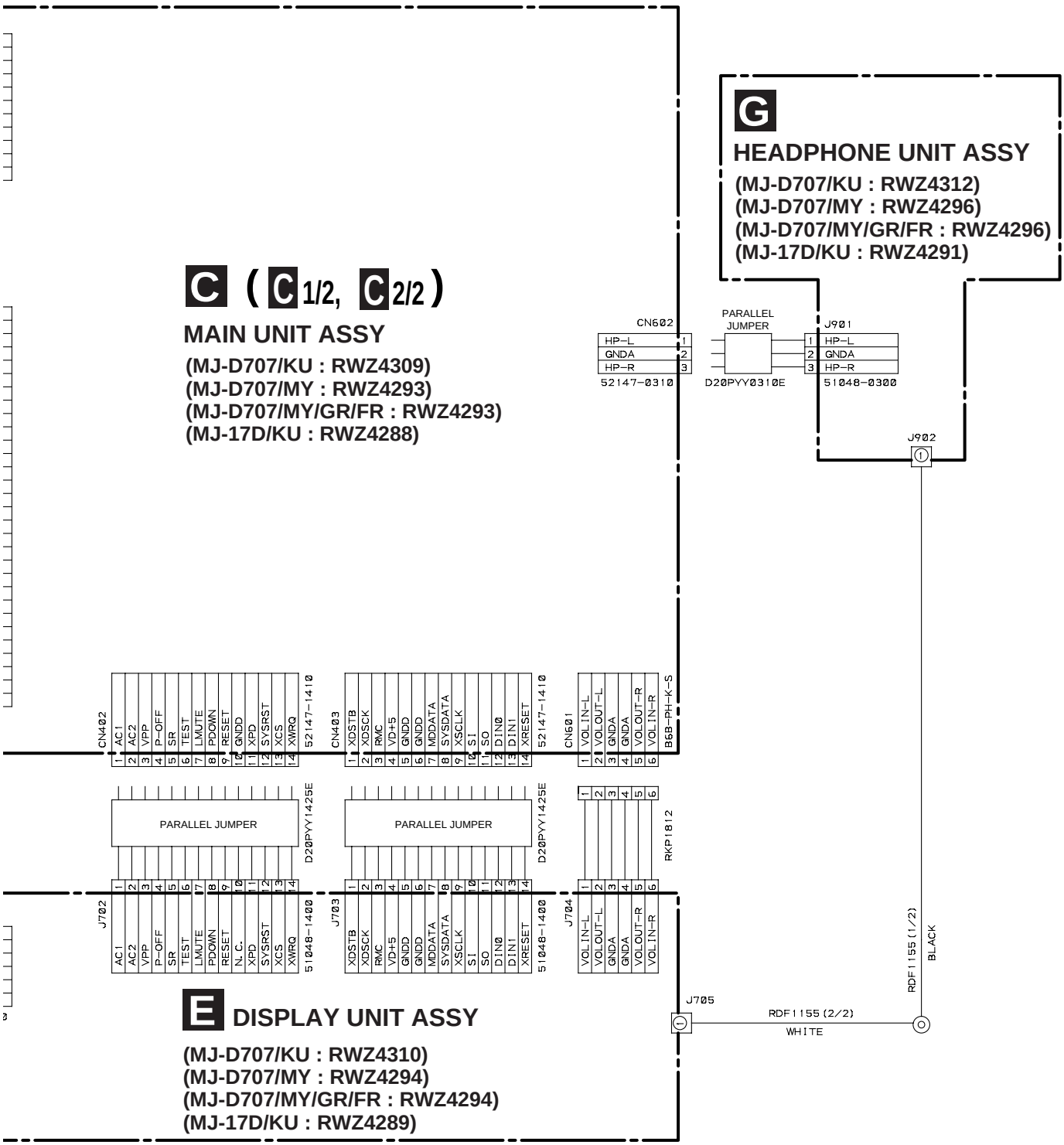
Mark	No.	Description	Part No.
	1	CORE MAIN UNIT ASSY	RWZ4271
	2	CORE SW UNIT ASSY	RWZ4272
	3	Lead Card 7P	RDD1399
	4	Lead Wire	RKP1814
	5	Lever Spring	RBH1463
	6	Clamp Spring 1	RBK1074
	7	Clamp Spring 2	RBK1075
	8	Loading Belt	REB1329
	9	Lock Plate	RNE1949
	10	Loading Base	RNK2312
	11	Under Slider	RNK2314
	12	Gear Pulley	RNK2316
	13	Drive Gear	RNK2317
	14	Clutch Gear	RNK2318
	15	Flip Disk	RNK2319
	16	SW Lever	RNK2320
	17	Shutter Assy	RXA1774
NSP	18	Upper Slider Assy	RXA1775
	19	Eject Spring	RBH1461
	20	Upper Slider	RNK2313
	21	Carrier	RNK2315
	22	Screw	RBA1129
	23	Spindle Spring	RBH1460
	24	Lifter SP	RBH1462
	25	Screw Guide	RBK1072
	26	S. H. Spring	RBK1073
	27	Guide Shaft	RLA1310
	28	Lead Screw	RLA1311
	29	Shield Case	RNE1950
	30	Reference Plate	RNK2306
	31	S. Holder	RNK2307
	32	Worm Wheel	RNK2309
	33	Hook	RNK2310
	34	Head Lifter	RNK2311
	35	MD Head	RPB1062
	36	MD Pick-up	RWY1018
	37	Screw	IPZ20P080FMC
	38	Screw	JFZ17P020FZK
	39	Screw	JGZ14P020FMC
	40	Screw	JGZ17P030FMC
	41	Screw	JGZ17P040FZK
	42	Screw	PMB20P040FMC
	43	Servo Base Assy	REA1283
NSP	44	Clamp Magnet	RMF1002
NSP	45	Servo Base	RNE1946
NSP	46	Disc Table	RNK2305
NSP	47	Spindle Motor	RXM1091
	48	Carriage Motor Assy	REA1284
	49	Worm	RNK2308
NSP	50	Carriage Motor	RXM1090
	51	Loading Motor Assy	REA1285
	52	DC Motor /0.75W	PXM1010
	53	CA Pulley (1)	VNL1197

3. SCHEMATIC DIAGRAM

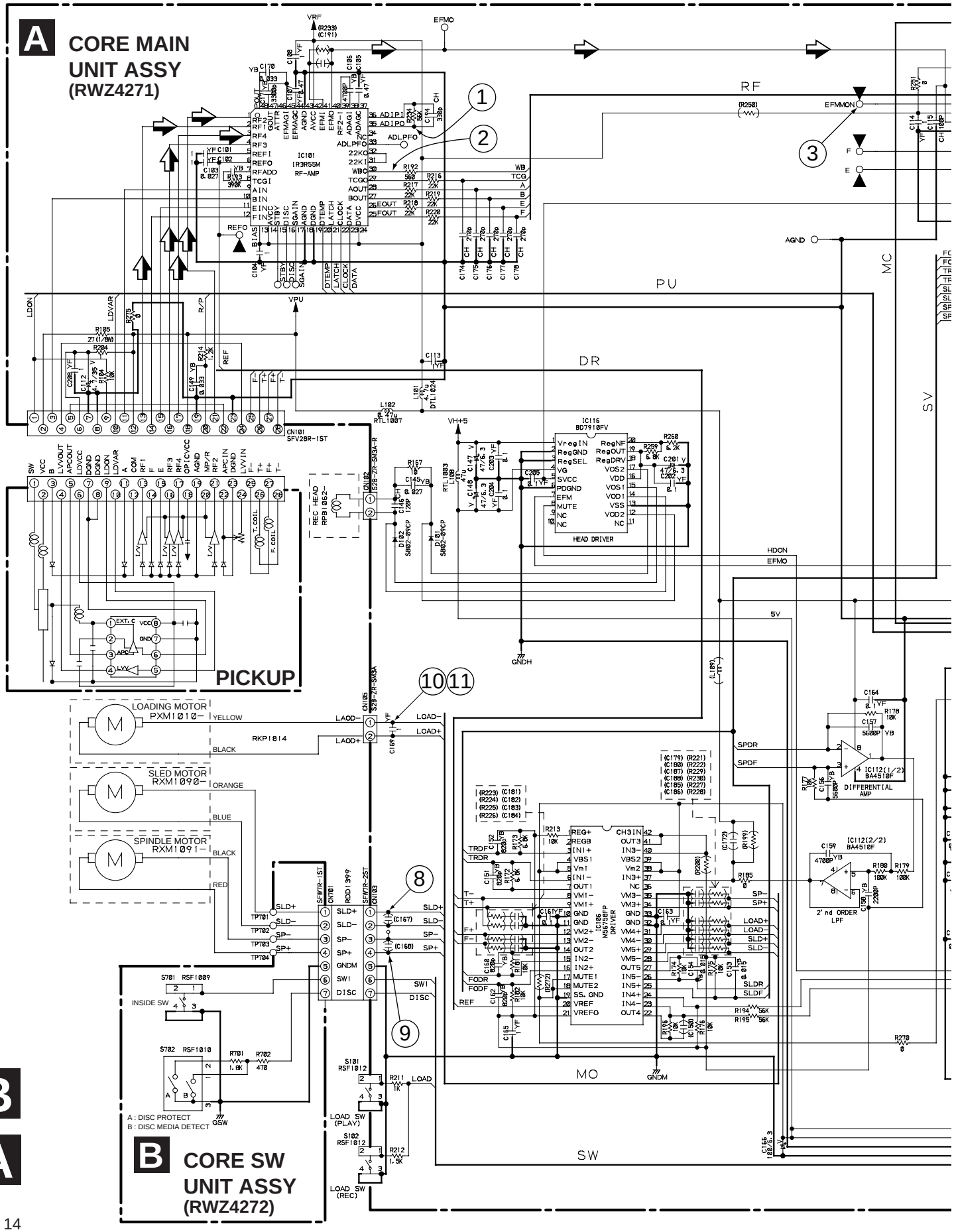
3.1 OVERALL CONNECTIONS



Note : When ordering service parts, be sure to refer to "EXPLODED VIEWS and PARTS LIST" or "PCB PARTS LIST".

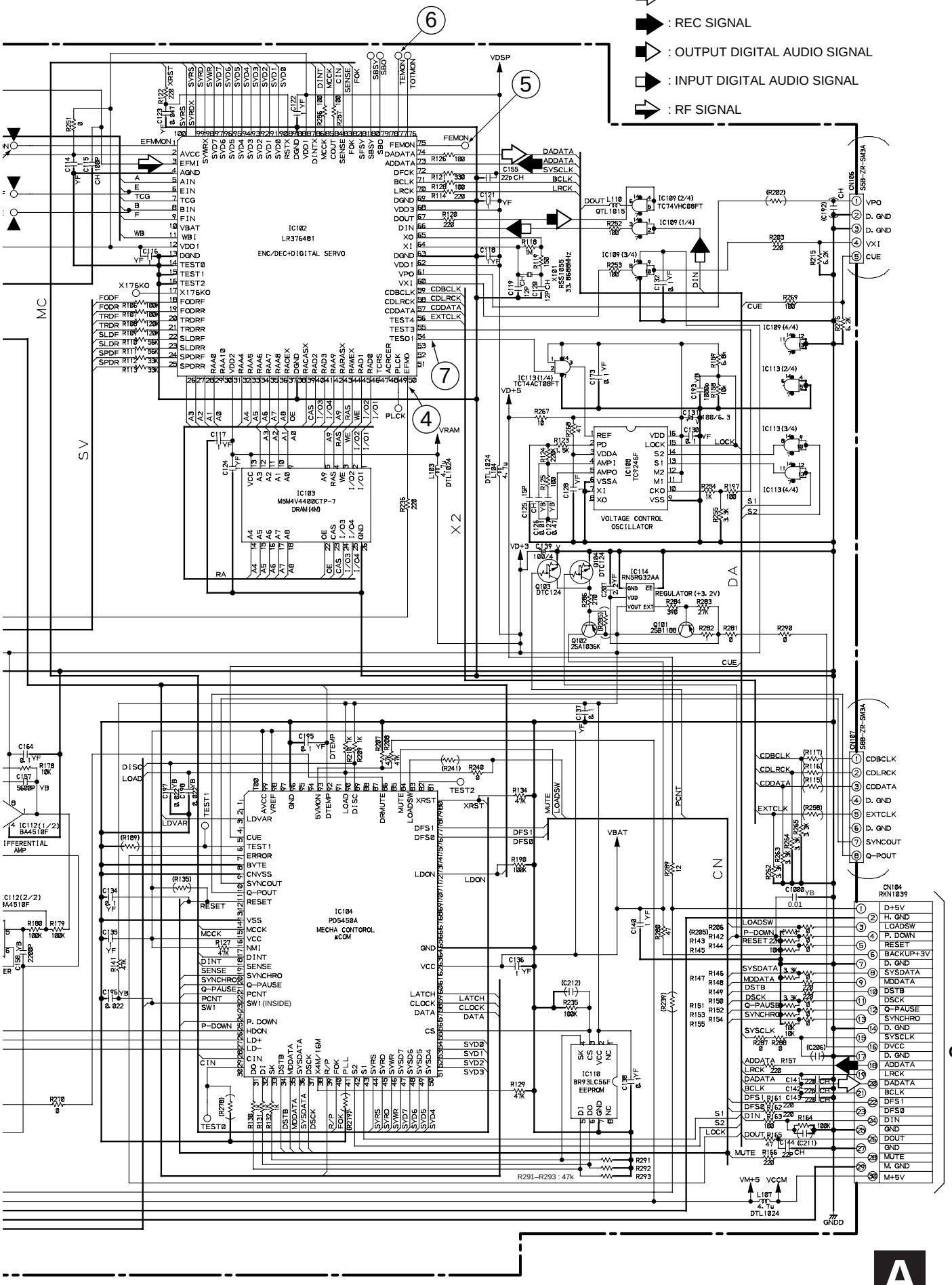


3.2 CORE MAIN UNIT and CORE SW UNIT ASSEMBLIES



● ① – ⑪ are waveform Nos. on pages 26 and 27.

SIGNAL ROUTE
: PLAYBACK SIGNAL
: REC SIGNAL
: OUTPUT DIGITAL AUDIO SIGNAL
: INPUT DIGITAL AUDIO SIGNAL
: RF SIGNAL



■ Voltages of CORE MAIN UNIT ASSY

IC101	
PIN NO.	VOLTAGE
1	0.78V
2	0.73V
3	0.77V
4	0.75V
5	1.61V
6	1.61V
7	0.75V
8	1.61V
9	1.61V
10	1.61V
11	1.61V
12	1.61V
13	3.19V
14	3.19V
15	0V
16	0V
17	3.19V
18	0V
19	0V
20	1.5V
21	3.2V
22	0V
23	0V
24	3.19V
25	2.0V
26	0V
27	1.40V
28	1.42V
29	1.40V
30	1.63V
31	1.61V
32	1.61V
33	0V
34	0V
35	0V
36	1.62V
37	0.59V
38	1.61V
39	1.61V
40	1.61V
41	1.61V
42	3.19V
43	0V
44	1.08V
45	1.61V
46	1.61V
47	0V
48	0.74V

IC102			
PIN NO.	VOLTAGE	PIN NO.	VOLTAGE
1	1.53V	51	1.59V
2	3.18V	52	0V
3	1.65V	53	0V
4	0V	54	1.59V
5	1.42V	55	1.8V
6	0V	56	0V
7	1.59V	57	0V
8	1.41V	58	0V
9	1.97V	59	0V
10	1.39V	60	0V
11	1.64V	61	0.56V
12	3.18V	62	3.18V
13	0V	63	0V
14	0V	64	1.5V
15	0V	65	1.5V
16	0V	66	3.2V
17	1.69V	67	1.6V
18	1.52V	68	3.2V
19	1.70V	69	0V
20	1.47V	70	1.6V
21	1.47V	71	1.6V
22	1.65V	72	1.48V
23	1.54V	73	0V
24	1.69V	74	0V
25	1.51V	75	1.68V
26	0.82V	76	1.82V
27	2.0V	77	1.59V
28	2.0V	78	0.35V
29	1.81V	79	0.02V
30	1.4V	80	3.2V
31	0.82V	81	3.2V
32	1.67V	82	0.02V
33	1.67V	83	0.03V
34	1.67V	84	1.9V
35	2.86V	85	1.56V
36	1.32V	86	3.1V
37	2.23V	87	3.2V
38	0V	88	0V
39	2.4V	89	3.19V
40	1.2V	90	0.5V
41	1.5V	91	0.5V
42	0V	92	0.5V
43	2.0V	93	0.5V
44	3.0V	94	0.9V
45	1.2V	95	0.5V
46	1.2V	96	0.5V
47	0.02V	97	0.5V
48	3.04V	98	0.8V
49	1.57V	99	3.18V
50	0.05V	100	0.06V

IC103	
PIN NO.	VOLTAGE
1	1.2V
2	1.2V
3	3.0V
4	2.0V
5	0V
9	2.23V
10	1.32V
11	2.86V
12	1.67V
13	3.18V
14	1.67V
15	1.67V
16	1.67V
17	2.86V
18	1.32V
22	2.23V
23	2.4V
24	1.2V
25	1.5V
26	0V

IC104			
PIN NO.	VOLTAGE	PIN NO.	VOLTAGE
1	0V	51	0.54V
2	0V	52	0.6V
3	0.22V	53	0.6V
4	0.03V	54	0.6V
5	1.29V	55	0V
6	2.21V	56	0V
7	3.13V	57	0V
8	0V	58	0V
9	0V	59	3.2V
10	0V	60	0V
11	0V	61	0V
12	3.03V	62	3.2V
13	1.43V	63	0V
14	0V	64	0V
15	1.57V	65	3.2V
16	3.2V	66	0V
17	3.19V	67	0V
18	3.1V	68	0V
19	0.03V	69	0V
20	0V	70	0V
21	0V	71	0V
22	3.18V	72	3.1V
23	3.2V	73	3.2V
24	0V	74	0V
25	2.67V	75	0V
26	3.19V	76	3.2V
27	0V	77	0V
28	0V	78	0V
29	2.4V	79	0V
30	0.24V	80	3.2V
31	0V	81	0V
32	0.3V	82	3.19V
33	3.2V	83	0V
34	1.56V	84	3.19V
35	1.0V	85	0V
36	0V	86	3.18V
37	2.77V	87	3.2V
38	0V	88	0V
39	3.18V	89	1.03V
40	0.02V	90	1.6V
41	3.19V	91	0.56V
42	3.2V	92	1.49V
43	0V	93	1.49V
44	0.05V	94	0.68V
45	3.18V	95	0.61V
46	3.19V	96	0V
47	0.51V	97	0.53V
48	0.4V	98	3.2V
49	0.3V	99	3.2V
50	0.55V	100	0V

IC106	
PIN NO.	VOLTAGE
1	1.6V
2	0.49V
3	1.61V
4	4.99V
5	4.99V
6	1.61V
7	1.62V
8	2.46V
9	2.51V
10	0V
11	0V
12	2.54V
13	2.45V
14	1.62V
15	1.62V
16	1.61V
17	3.17V
18	0V
19	1.61V
20	1.61V
21	1.61V
22	1.61V
23	1.36V
24	1.36V
25	1.61V
26	1.61V
27	1.63V
28	2.41V
29	2.55V
30	2.47V
31	2.48V
32	0V
33	0V
34	2.79V
35	2.18V
36	0V
37	1.69V
38	5.0V
39	4.99V
40	1.67V
41	1.69V
42	1.69V

IC108	
PIN NO.	VOLTAGE
1	2.47V
2	2.63V
3	4.87V
4	2.63V
5	1.59V
6	0V
7	0V
8	4.87V
9	0V
10	2.25V
11	4.94V
12	4.94V
13	4.94V
14	4.94V
15	3.12V
16	4.94V

IC114	
PIN NO.	VOLTAGE
1	0V
2	4.19V
3	3.21V
4	2.81V
5	0V

IC109	
PIN NO.	VOLTAGE
1	2.77V
2	2.77V
3	3.2V
4	1.58V
5	1.58V
6	1.56V
7	0V
8	0V
9	0V
10	0V
11	0V
12	0V
13	0V
14	3.2V

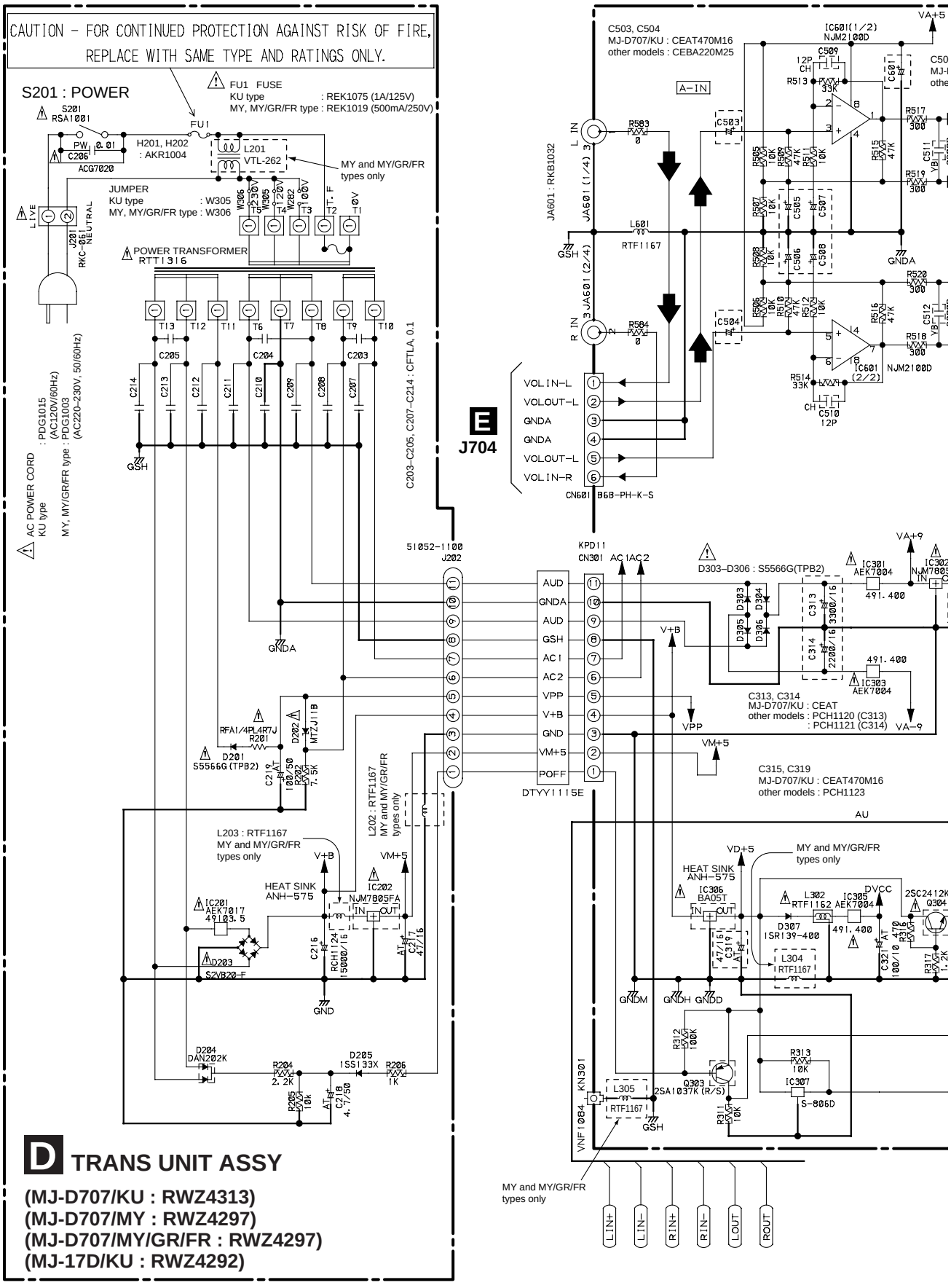
IC116	
PIN NO.	VOLTAGE
1	4.98V
2	0V
3	0V
4	4.99V
5	3.2V
6	0V
7	0.03V
8	3.18V
9	0V
10	0V
11	0V
12	0.22V
13	0V
14	0.25V
15	0.25V
16	2.82V
17	0.16V
18	4.94V
19	2.82V
20	1.33V

IC110	
PIN NO.	VOLTAGE
1	0V
2	3.2V
3	0V
4	3.2V
5	0V
6	0.11V
7	0V
8	0V

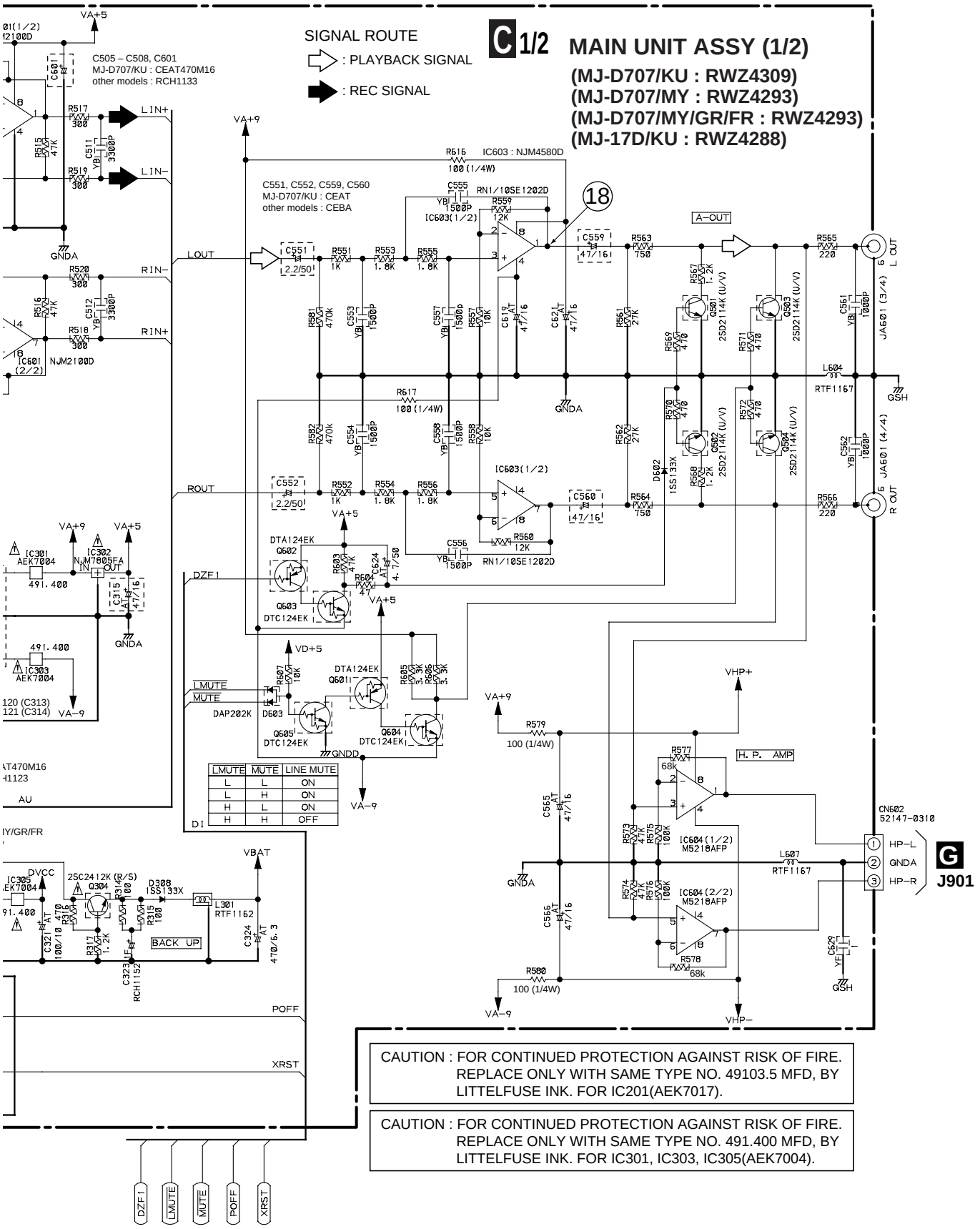
IC112	
PIN NO.	VOLTAGE
1	1.66V
2	1.62V
3	1.62V
4	0V
5	1.67V
6	1.67V
7	1.67V
8	3.19V

IC113	
PIN NO.	VOLTAGE
1	4.95V
2	3.96V
3	0V
4	0V
5	0V
6	0V
7	0V
8	0V
9	4.94V
10	4.12V
11	3.19V
12	0V
13	0V
14	4.94V

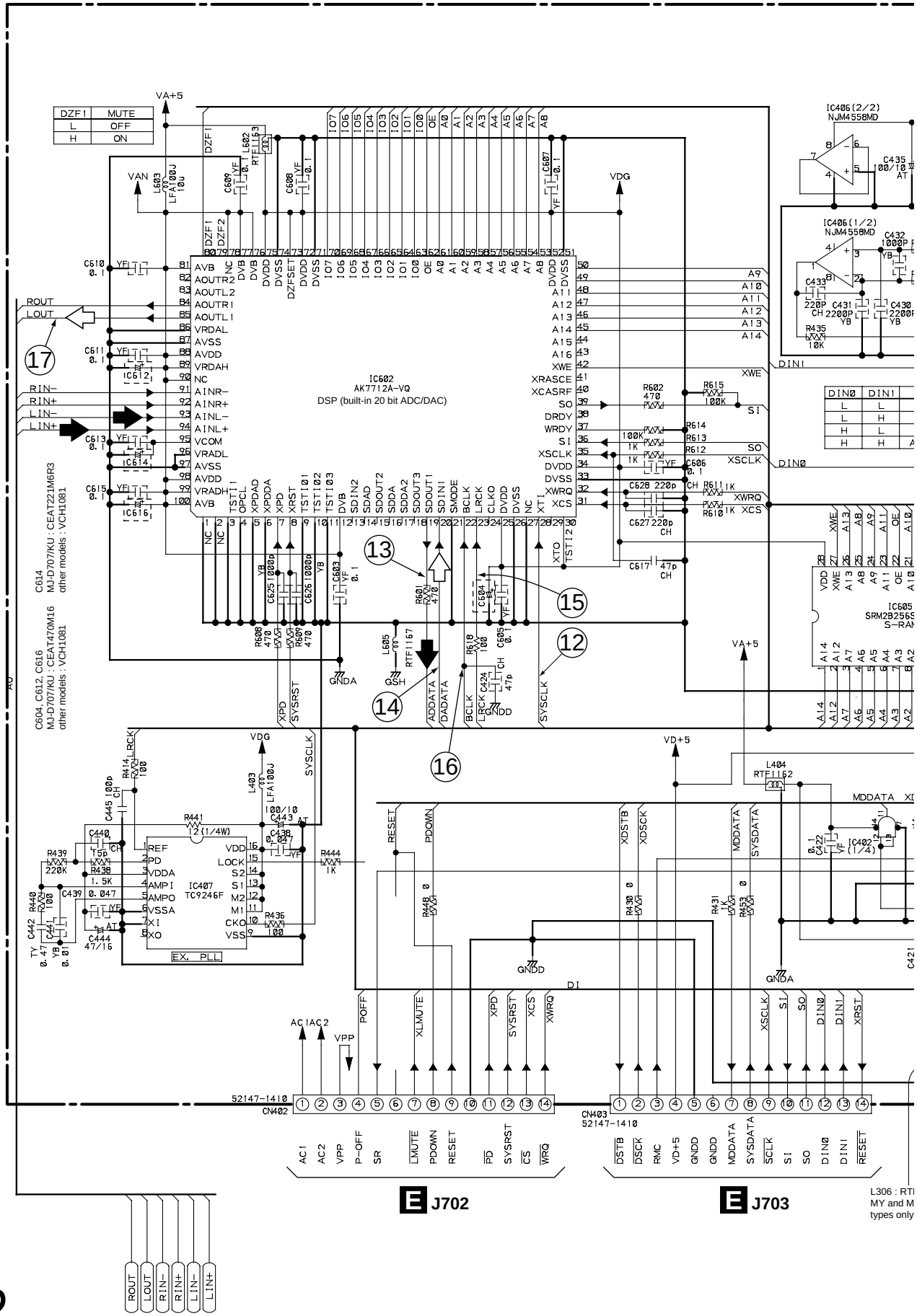
3.3 MAIN UNIT ASSY (1/2) and TRANS UNIT ASSY



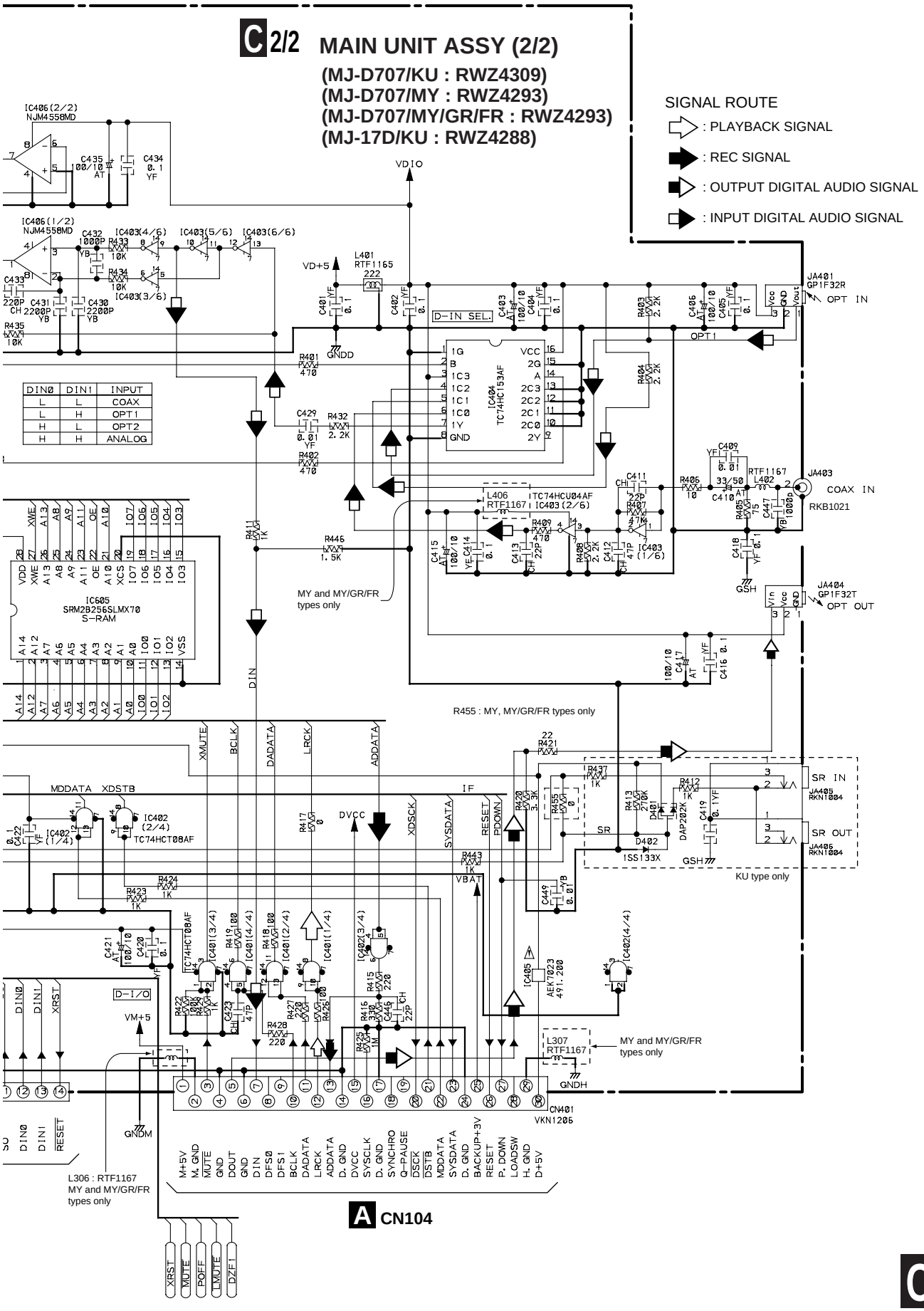
● ⑱ is waveform Nos. on page 27.



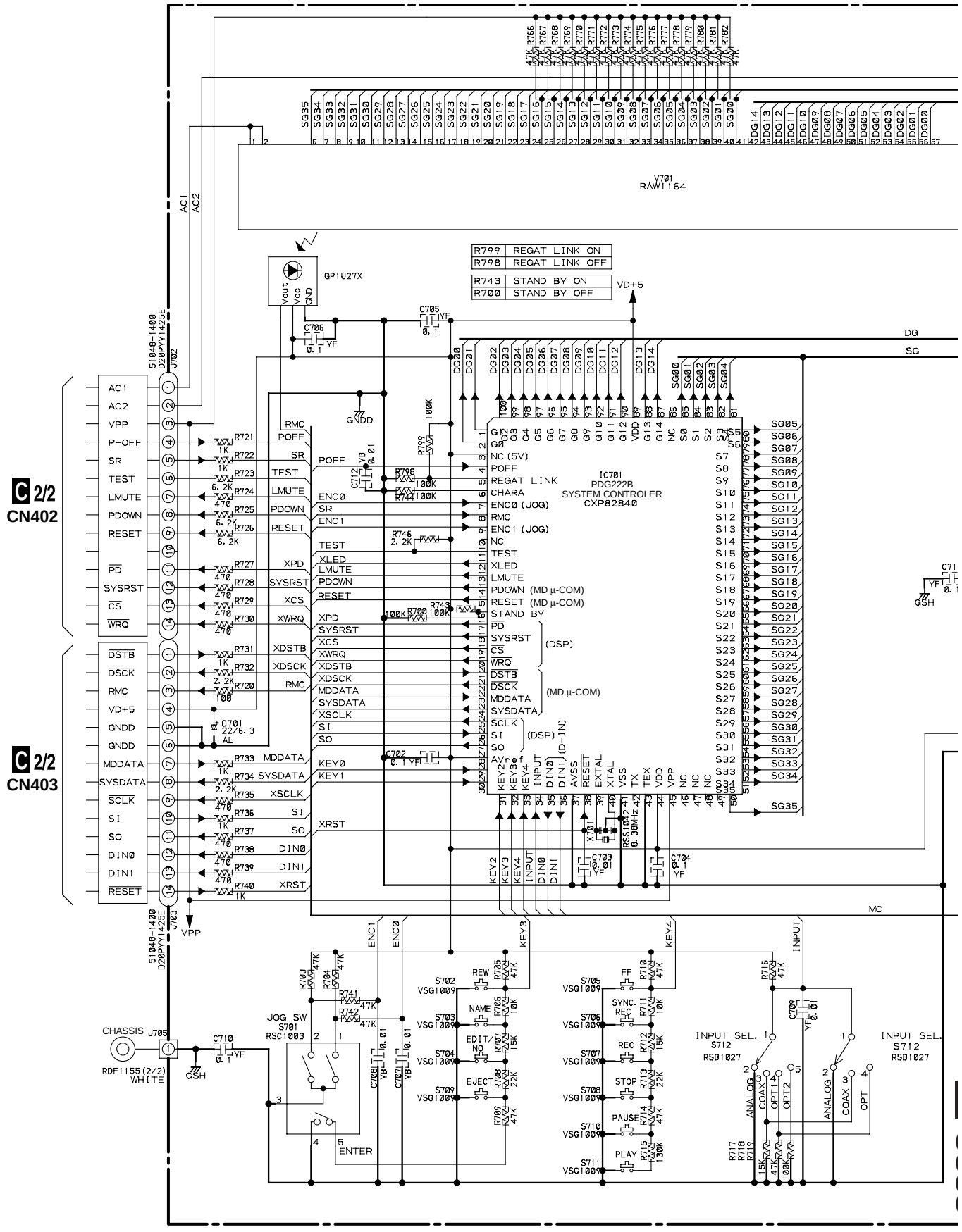
3.4 MAIN UNIT ASSY (2/2)

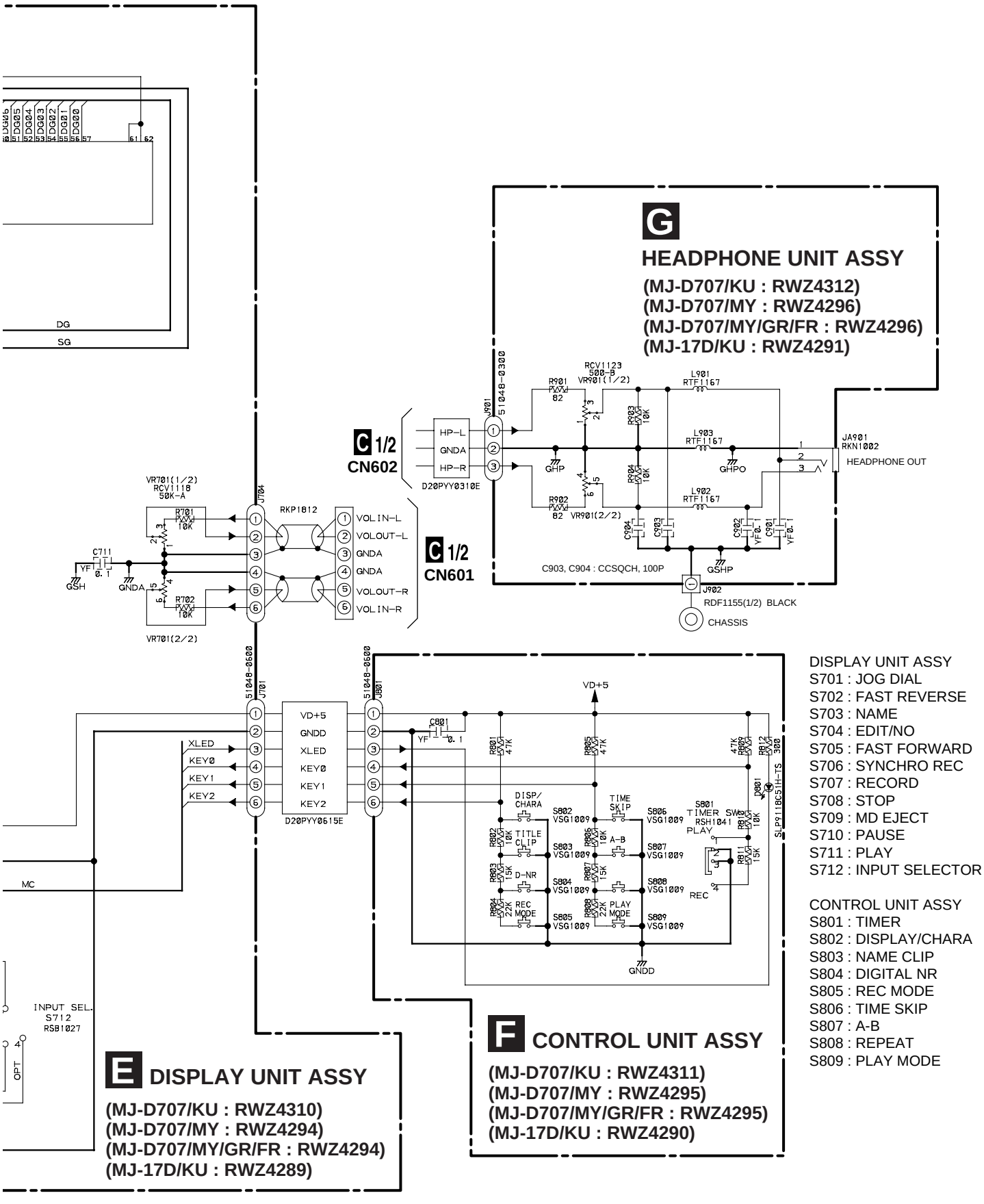


● ⑫ – ⑯ are waveform Nos. on pages 26 and 27.



3.5 DISPLAY UNIT, CONTROL UNIT and HEADPHONE UNIT ASSEMBLIES





DISPLAY UNIT ASSY
S701 : JOG DIAL
S702 : FAST REVERSE
S703 : NAME
S704 : EDIT/NO
S705 : FAST FORWARD
S706 : SYNCHRO REC
S707 : RECORD
S708 : STOP
S709 : MD EJECT
S710 : PAUSE
S711 : PLAY
S712 : INPUT SELECTOR

CONTROL UNIT ASSY
S801 : TIMER
S802 : DISPLAY/CHARA
S803 : NAME CLIP
S804 : DIGITAL NR
S805 : REC MODE
S806 : TIME SKIP
S807 : A-B
S808 : REPEAT
S809 : PLAY MODE

■ Voltages of MAIN UNIT ASSY

IC401	
PIN NO.	VOLTAGE
1	3.2V
2	3.2V
3	5.0V
4	1.6V
5	1.6V
6	2.5V
7	0V
8	2.5V
9	1.6V
10	1.6V
11	1.6V
12	1.0V
13	1.0V
14	5.0V

IC402	
PIN NO.	VOLTAGE
1	0V
2	0V
3	0V
4	0V
5	0V
6	0V
7	0V
8	2.5V
9	1.6V
10	1.6V
11	1.6V
12	1.0V
13	1.0V
14	5.0V

IC403	
PIN NO.	VOLTAGE
1	2.5V
2	2.5V
3	2.5V
4	3.4V
5	0V
6	5.0V
7	0V
8	0V
9	4.7V
10	4.7V
11	0V
12	0V
13	4.5V
14	5.0V

IC404	
PIN NO.	VOLTAGE
1	0V
2	4.3V
3	5.0V
4	5.0V
5	5.0V
6	3.4V
7	5.0V
8	0V
9	0V
10	0V
11	0V
12	0V
13	0V
14	5.0V
15	0V
16	5.0V

IC602			
PIN NO.	VOLTAGE	PIN NO.	VOLTAGE
1	0V	51	0V
2	0V	52	5.0V
3	0V	53	2.5V
4	0V	54	2.5V
5	0V	55	2.5V
6	0V	56	2.5V
7	5.0V	57	2.5V
8	5.0V	58	2.5V
9	0V	59	2.5V
10	0V	60	2.5V
11	0V	61	2.5V
12	5.0V	62	2.5V
13	0V	63	2.5V
14	0V	64	2.5V
15	0V	65	2.5V
16	0V	66	2.5V
17	0V	67	2.5V
18	0V	68	2.5V
19	0V	69	2.5V
20	0V	70	2.5V
21	0V	71	0V
22	2.5V	72	5.0V
23	2.5V	73	5.0V
24	0V	74	0V
25	5.0V	75	5.0V
26	0V	76	0V
27	0V	77	5.02V
28	2.3V	78	5.02V
29	2.6V	79	5.02V
30	5.0V	80	0V
31	0.15V	81	5.02V
32	4.9V	82	2.5V
33	0V	83	2.5V
34	5.0V	84	2.5V
35	4.9V	85	2.5V
36	0.18V	86	0V
37	4.8V	87	0V
38	4.8V	88	5.02V
39	0.15V	89	5.02V
40	1.7V	90	5.02V
41	0.3V	91	2.5V
42	3.3V	92	2.5V
43	2.5V	93	2.5V
44	2.5V	94	2.5V
45	3.3V	95	2.51V
46	2.5V	96	0V
47	2.5V	97	0V
48	2.5V	98	5.02V
49	2.5V	99	5.02V
50	2.5V	100	5.02V

IC406	
PIN NO.	VOLTAGE
1	4.6V
2	5.0V
3	0V
4	0V
5	0V
6	4.6V
7	4.6V
8	5.0V

IC407	
PIN NO.	VOLTAGE
1	2.5V
2	2.7V
3	5.0V
4	2.7V
5	1.7V
6	0V
7	0V
8	5.0V
9	0V
10	2.3V
11	5.0V
12	5.0V
13	5.0V
14	5.0V
15	5.0V
16	5.0V

IC601	
PIN NO.	VOLTAGE
1	2.55V
2	2.55V
3	2.55V
4	0V
5	2.55V
6	2.55V
7	2.55V
8	5.06V

IC603	
PIN NO.	VOLTAGE
1	0.028V
2	0.013V
3	0.013V
4	–9.31V
5	0.013V
6	0.013V
7	0.027V
8	8.49V

IC604	
PIN NO.	VOLTAGE
1	0V
2	0V
3	0V
4	0V
5	0V
6	0V
7	0V
8	8.89V

IC605	
PIN NO.	VOLTAGE
1	2.5V
2	2.5V
3	2.5V
4	2.5V
5	2.5V
6	2.5V
7	2.5V
8	2.5V
9	2.5V
10	4.7V
11	2.5V
12	2.5V
13	2.5V
14	0V
15	2.5V
16	2.5V
17	2.5V
18	2.5V
19	2.5V
20	0V
21	0.5V
22	2.5V
23	2.5V
24	2.5V
25	2.5V
26	2.5V
27	4.8V
28	5.0V

■ Voltages of DISPLAY UNIT ASSY

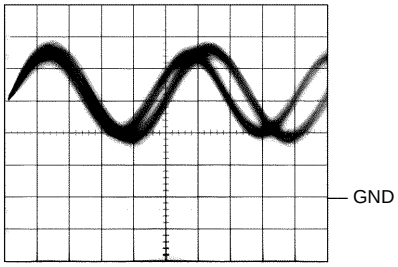
IC701			
PIN NO.	VOLTAGE	PIN NO.	VOLTAGE
1	– 28.0V	51	– 23.3V
2	– 28.0V	52	– 11.9V
3	5.0V	53	– 14.2V
4	0V	54	– 18.9V
5	5.0V	55	– 16.6V
6	0V	56	– 14.5V
7	5.0V	57	– 23.5V
8	5.0V	58	– 21.1V
9	5.0V	59	– 23.3V
10	0V	60	– 12.3V
11	4.9V	61	– 14.4V
12	5.0V	62	– 23.5V
13	0V	63	– 18.8V
14	4.9V	64	– 18.8V
15	5.0V	65	– 12.2V
16	5.0V	66	– 14.4V
17	5.0V	67	– 14.3V
18	5.0V	68	– 12.1V
19	0.1V	69	– 16.6V
20	4.9V	70	– 16.7V
21	2.5V	71	– 12.1V
22	4.6V	72	– 16.4V
23	1.6V	73	– 16.5V
24	0V	74	– 18.8V
25	4.9V	75	– 12.1V
26	0V	76	– 14.4V
27	0V	77	– 23.5V
28	5.0V	78	– 19.1V
29	5.0V	79	– 21.2V
30	5.0V	80	– 14.4V
31	5.0V	81	– 18.9V
32	5.0V	82	– 18.9V
33	5.0V	83	– 16.6V
34	0V	84	– 16.7V
35	5.0V	85	– 16.7V
36	5.0V	86	– 29.5V
37	0V	87	– 28.0V
38	5.0V	88	– 28.0V
39	2.3V	89	5.0V
40	2.4V	90	– 28.0V
41	0V	91	– 28.0V
42	5.0V	92	– 28.0V
43	0V	93	– 28.0V
44	5.0V	94	– 28.0V
45	– 30.3V	95	– 28.0V
46	0V	96	– 28.0V
47	0V	97	– 28.0V
48	0V	98	– 28.0V
49	0V	99	– 28.0V
50	– 30.3V	100	– 28.0V

Waveforms

Note: The encircled numbers denote measuring point in the schematic diagram and the PCB connection diagram.

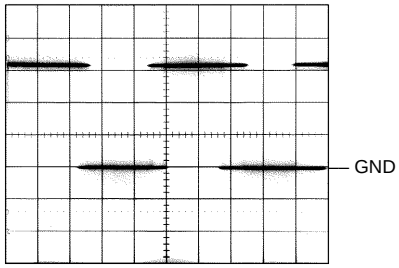
1 IC101-pin35 (ADIPO)
(CORE MAIN UNIT ASSY)
MODE: PLAY
DISC: GGF1328 (MMD–212)

DC500mV/div., 10 µSec/div.



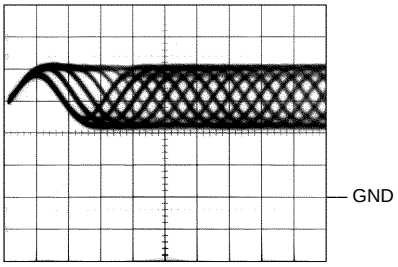
2 IC101-pin30 (WBO)
(CORE MAIN UNIT ASSY)
MODE: PLAY
DISC: GGF1328 (MMD–212)

DC1V/div., 10 µSec/div.



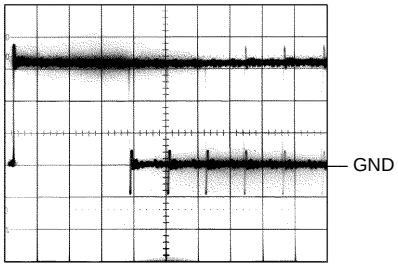
3 IC102-pin1 (EFM MON)
(CORE MAIN UNIT ASSY)
MODE: PLAY
DISC: TGTS1 or MMD–110

DC500mV/div., 0.5mSec/div.



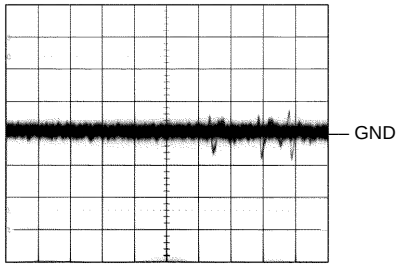
4 IC102-pin50 (EFMO)
(CORE MAIN UNIT ASSY)
MODE: REC
DISC: GGF1328 (MMD–212)

DC1V/div., 0.2 µSec/div.

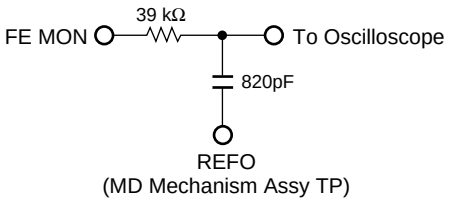


5 IC102-pin75 (FE MON)
(CORE MAIN UNIT ASSY)
MODE: PLAY
DISC: TGTS1 or MMD–110

DC100mV/div., 2mSec/div.

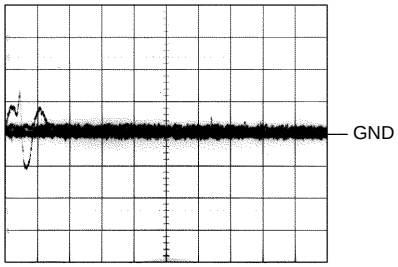


Measurement Method

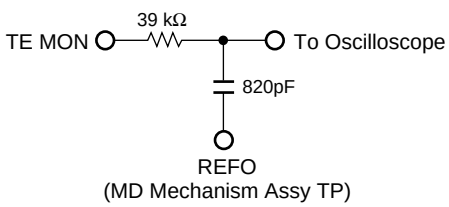


6 IC102-pin77 (TE MON)
(CORE MAIN UNIT ASSY)
MODE: PLAY
DISC: TGTS1 or MMD–110

DC500mV/div., 2mSec/div.

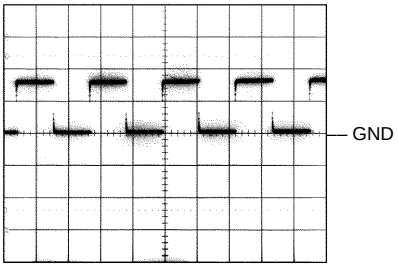


Measurement Method



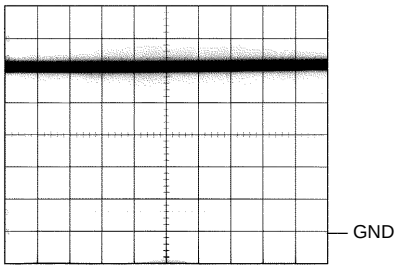
7 IC102-pin54 (TES01)
(CORE MAIN UNIT ASSY)
MODE: STOP

DC2V/div., 10 µSec/div.



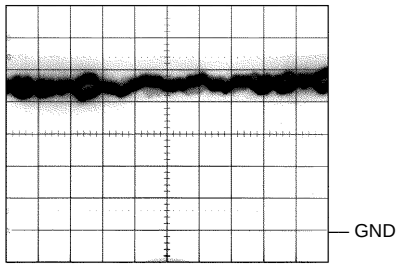
8 CN103-pin1 (SLD +)
(CORE MAIN UNIT ASSY)
MODE: PLAY

DC500mV/div., 2mSec/div.



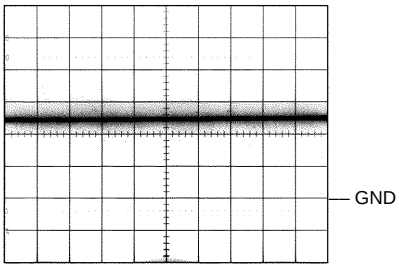
9 CN103-pin4 (SP +)
(CORE MAIN UNIT ASSY)
MODE: PLAY

DC500mV/div., 5mSec/div.



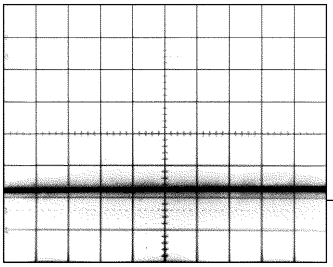
10 CN105-pin1 (LOAD –)
(CORE MAIN UNIT ASSY)
MODE: STOP

DC1V/div., 1mSec/div.



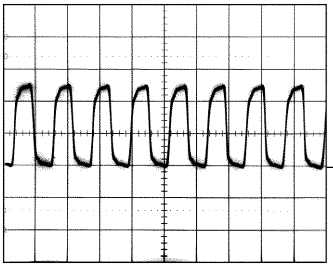
11 CN105-pin1 (LOAD –)
(CORE MAIN UNIT ASSY)
MODE: EJECT

DC1V/div., 1mSec/div.



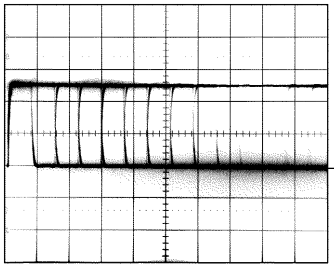
12 IC602-pin28 (SYS CLK)
(MAIN UNIT ASSY)
MODE: STOP

DC2V/div., 50nSec/div.



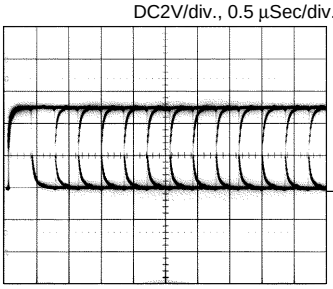
13 IC602-pin19 (AD DATA)
(MAIN UNIT ASSY)
MODE: REC (ANALOG)
DISC: GGF1328 (MMD-212)

DC2V/div., 0.5 µSec/div.



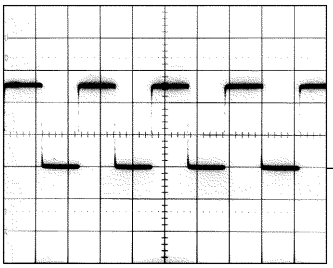
14 CN602-pin20 (DA DATA)
(MAIN UNIT ASSY)
MODE: PLAY (1 kHz, 0 dB)

DC2V/div., 0.5 µSec/div.



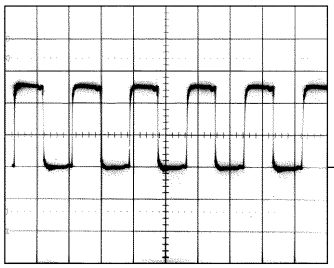
15 IC602-pin23 (LRCK)
(MAIN UNIT ASSY)
MODE: PLAY (1 kHz, 0 dB)

DC2V/div., 10 µSec/div.



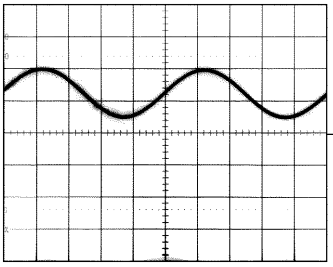
16 IC602-pin22 (BCLK)
(MAIN UNIT ASSY)
MODE: PLAY (1 kHz, 0 dB)

DC2V/div., 0.2 µSec/div.



17 CN602-pin85 (LOUT)
(MAIN UNIT ASSY)
MODE: PLAY (1 kHz, 0 dB)

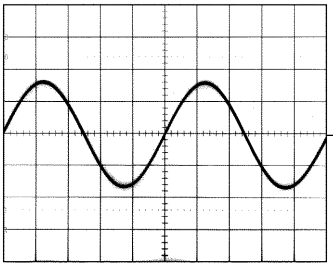
DC2V/div., 0.2mSec/div.



18 IC603-pin1 (MAIN UNIT ASSY)

MODE: PLAY (1 kHz, 0 dB)

AC2V/div., 0.2mSec/div.



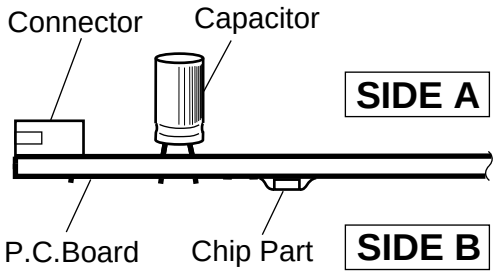
4. PCB CONNECTION DIAGRAM

NOTE FOR PCB DIAGRAMS :

1. Part numbers in PCB diagrams match those in the schematic diagrams.
2. A comparison between the main parts of PCB and schematic diagrams is shown below.

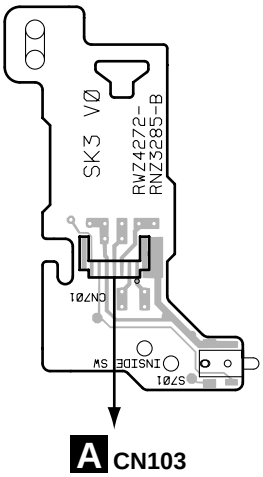
Symbol In PCB Diagrams	Symbol In Schematic Diagrams	Part Name
B C E	B C E B C E	Transistor
B C E	B C E B C E	Transistor with resistor
D G S	D G S D G S	Field effect transistor
		Resistor array
		3-terminal regulator

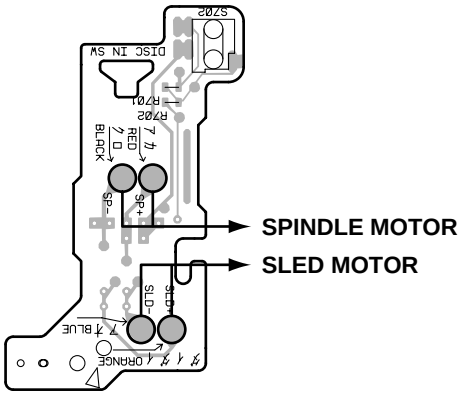
3. The parts mounted on this PCB include all necessary parts for several destinations.
   For further information for respective destinations, be sure to check with the schematic diagram.
4. View point of PCB diagrams.



4.1 CORE SW UNIT ASSEMBLY

B **CORE SW UNIT ASSY**





(RNP1721-B)

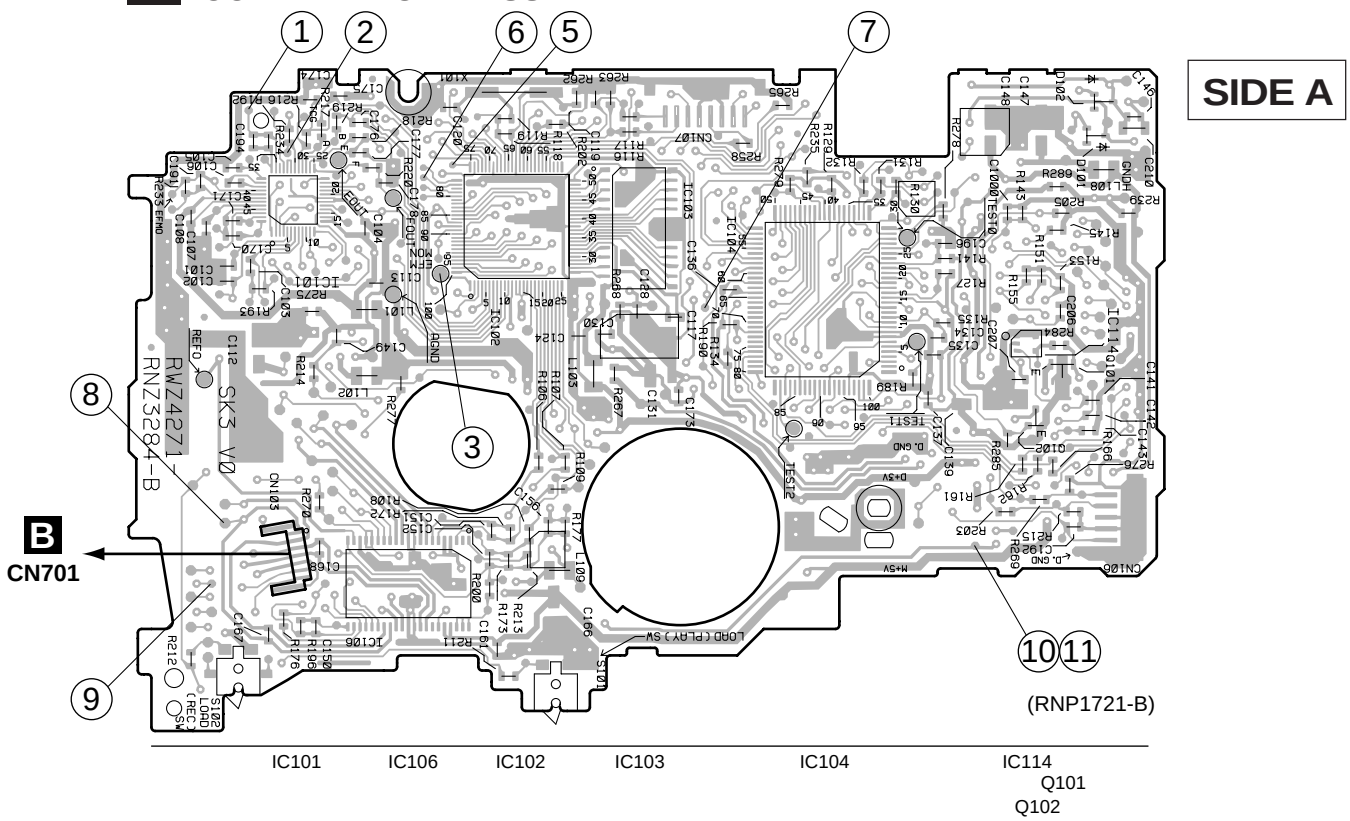
SIDE A

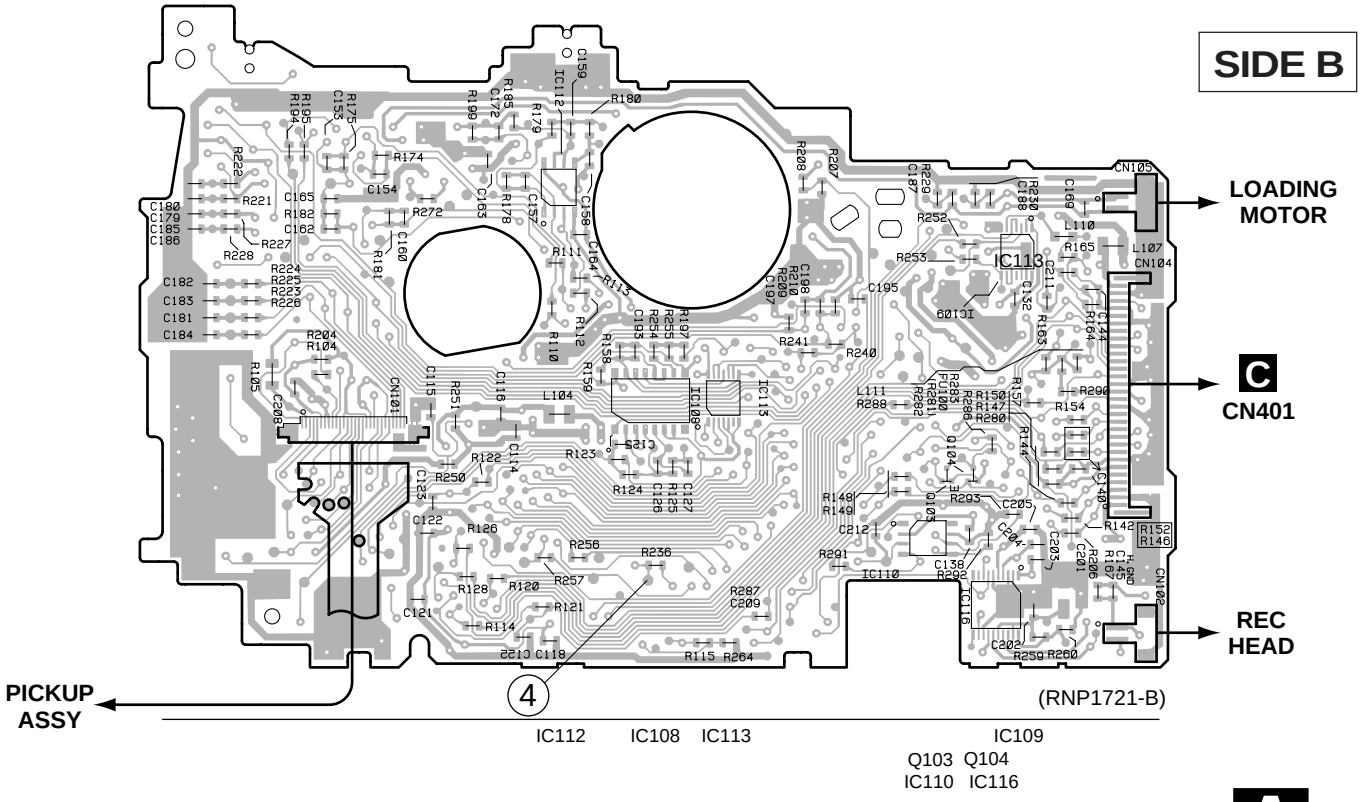
SIDE B

4.2 CORE MAIN UNIT ASSEMBLY

● ① – ⑪ are waveform Nos. on pages 26 and 27.

A CORE MAIN UNIT ASSY





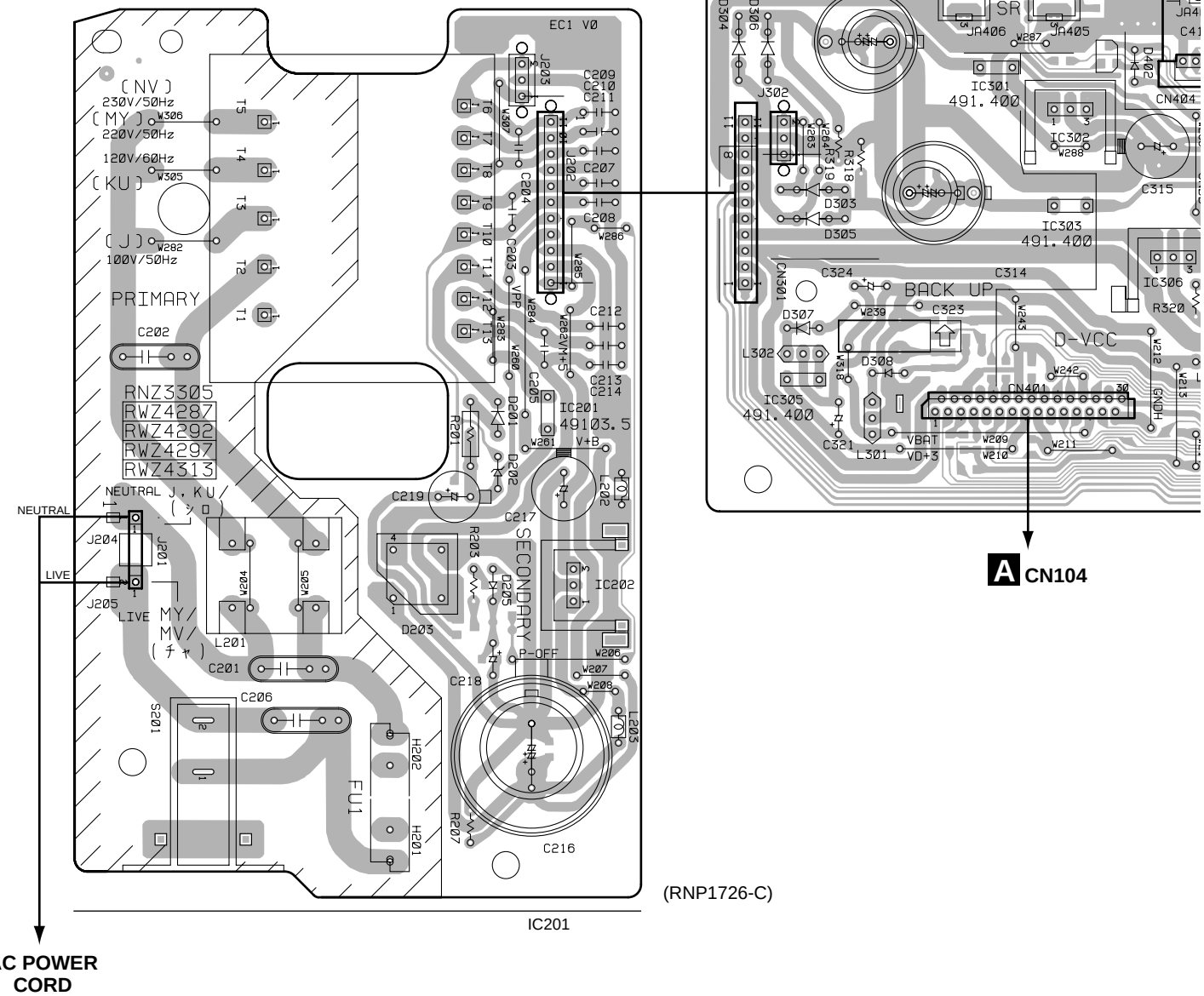
4.3 MAIN UNIT and TRANS UNIT ASSEMBLIES

SIDE A

C **MAIN UNIT ASSY**

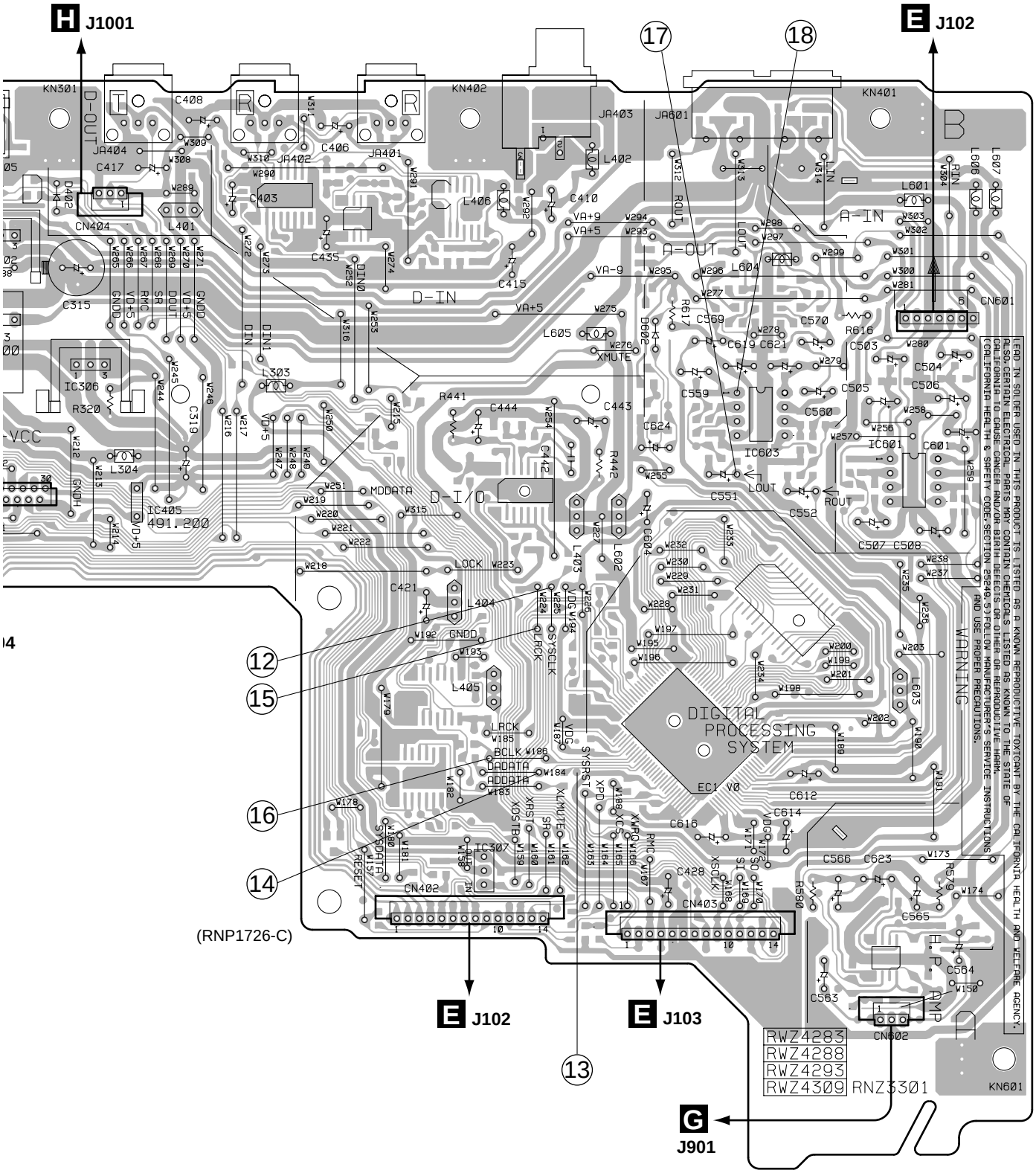
H J10

D **TRANS UNIT ASSY**



● ⑫ – ⑱ are waveform Nos. on page 25.

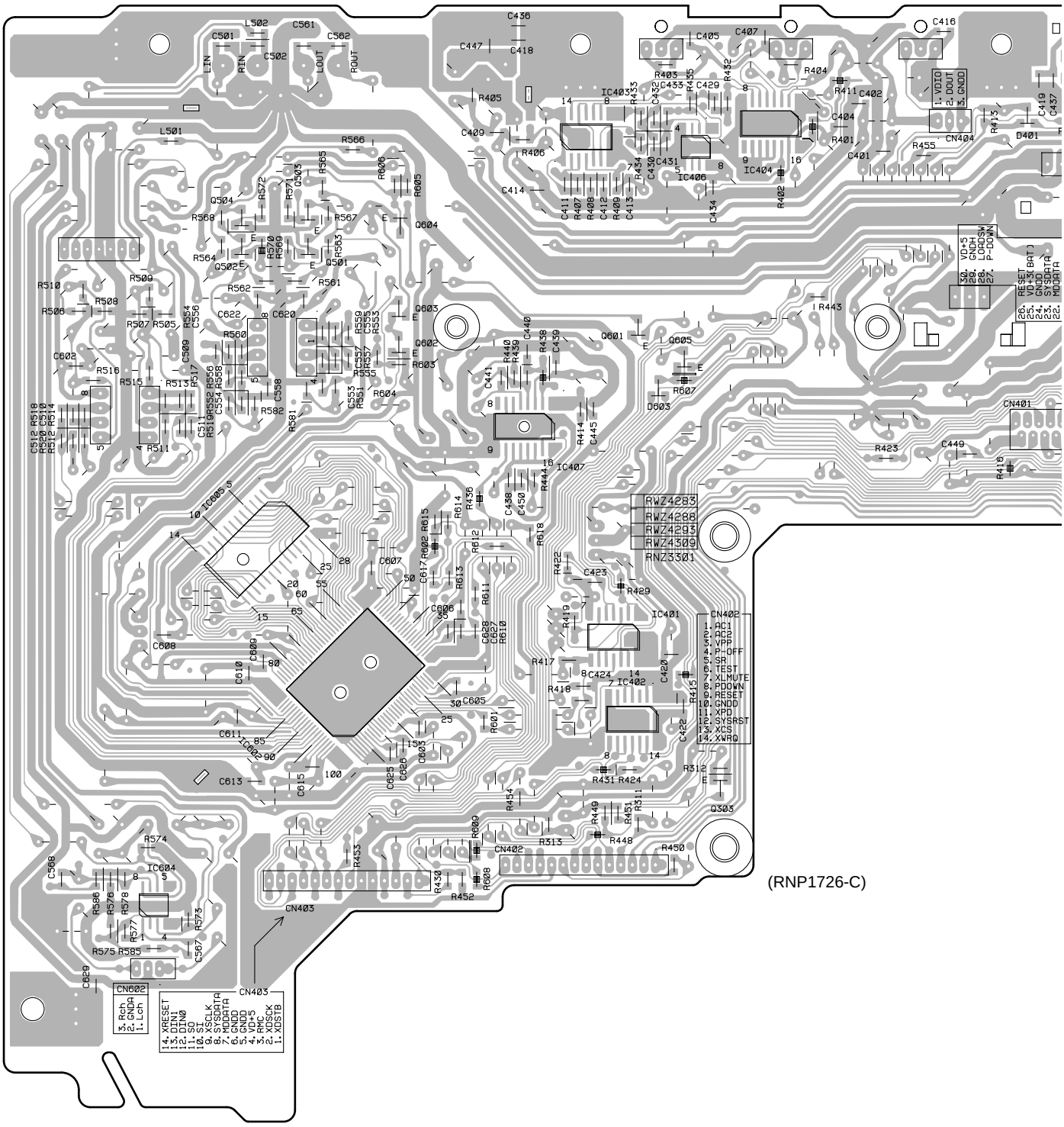
SIDE A



3 IC405 IC307

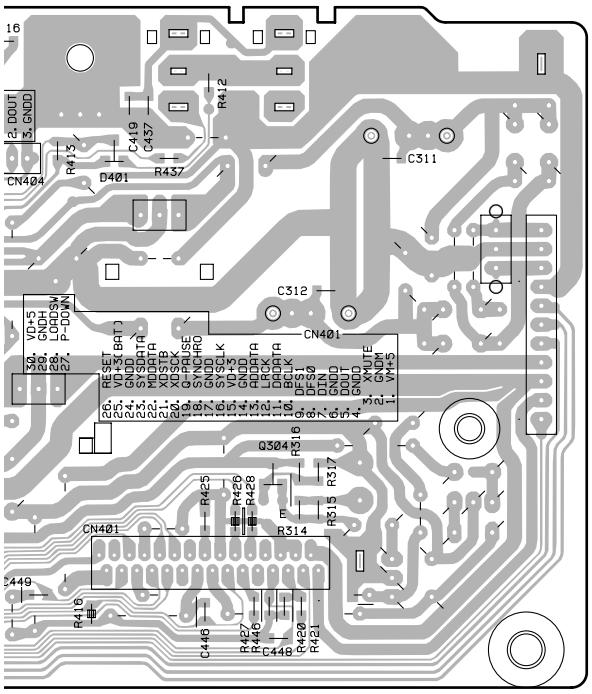
SIDE B

C MAIN UNIT ASSY



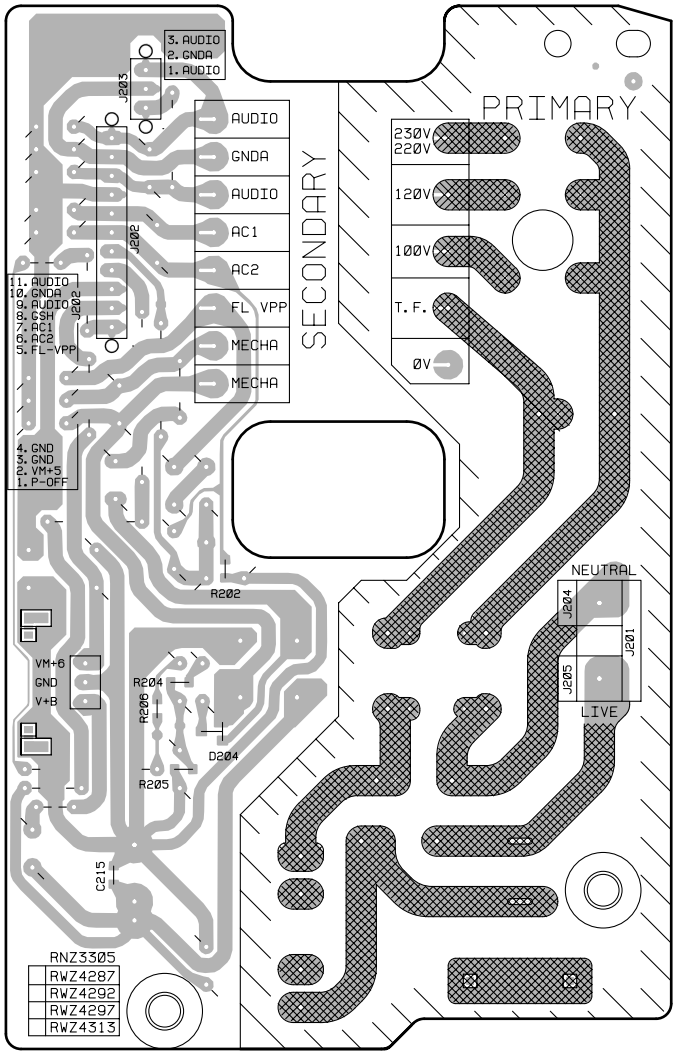
IC604 Q504 Q503 IC602 Q604 IC407 IC403 Q601 IC406 IC404
Q502 Q501 Q603 IC401 Q605 Q303
IC605 Q602 IC402

SIDE B



Q304

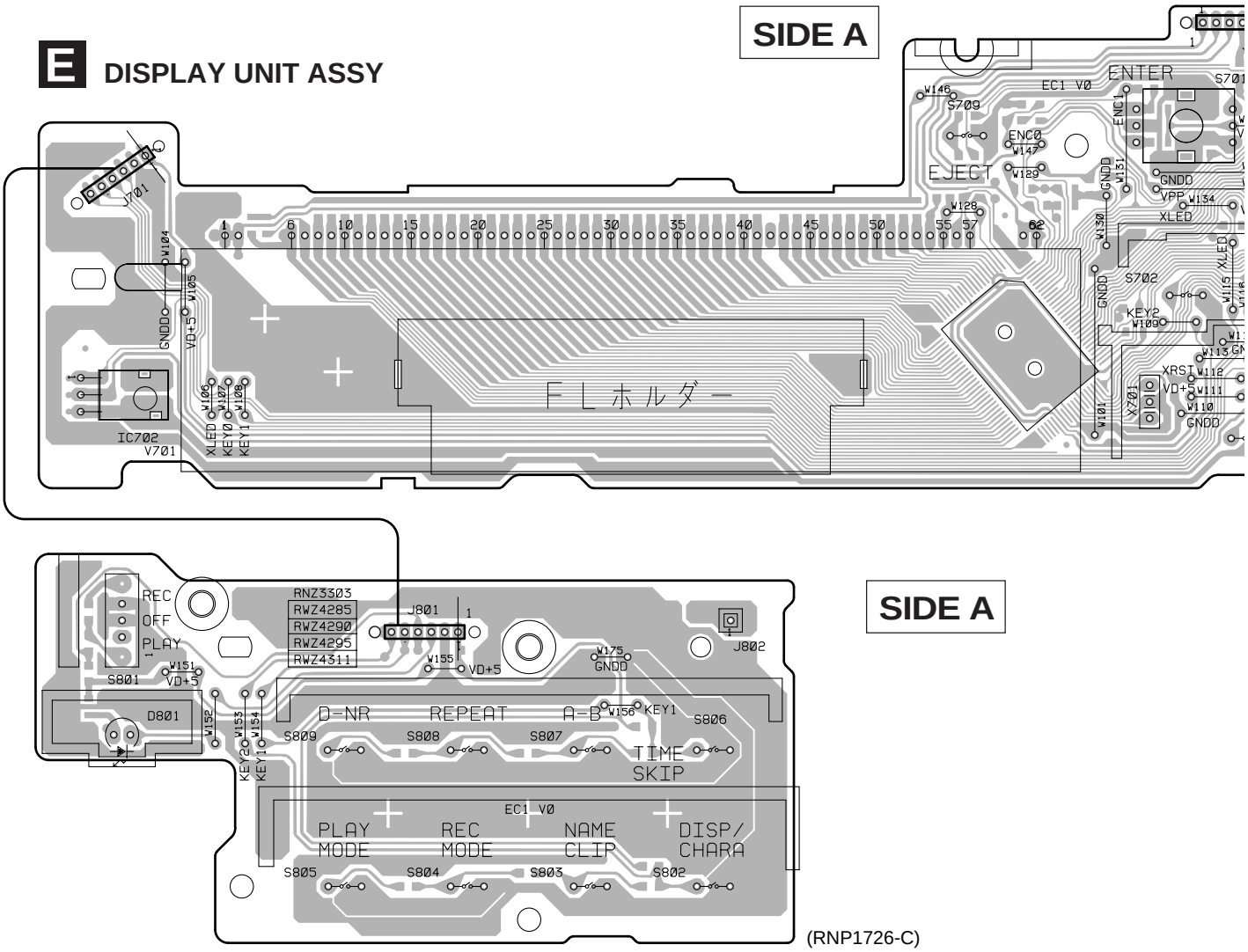
D TRANS UNIT ASSY



(RNP1726-C)

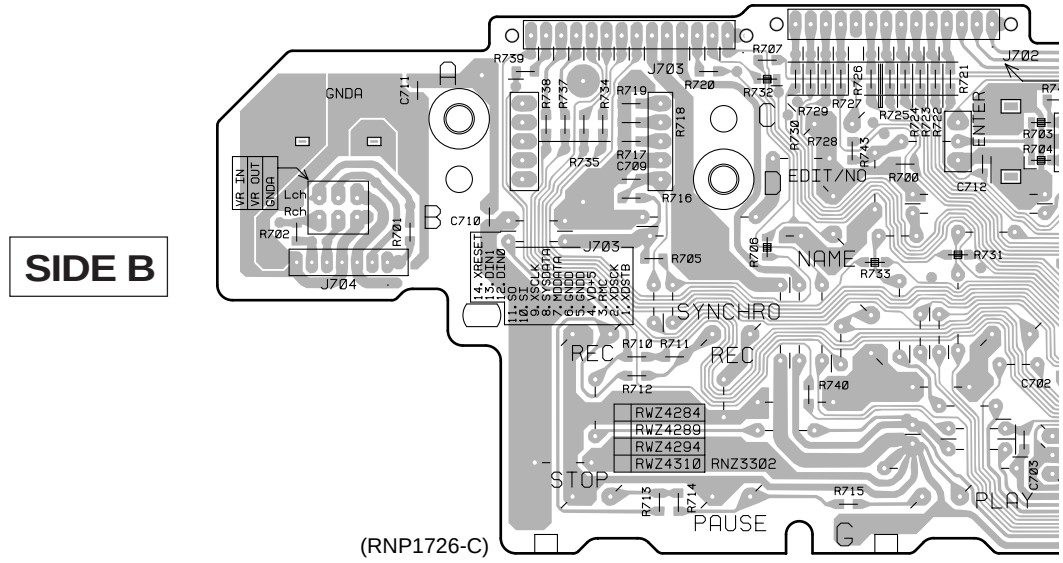
4.4 DISPLAY UNIT and CONTROL UNIT ASSEMBLIES

E DISPLAY UNIT ASSY

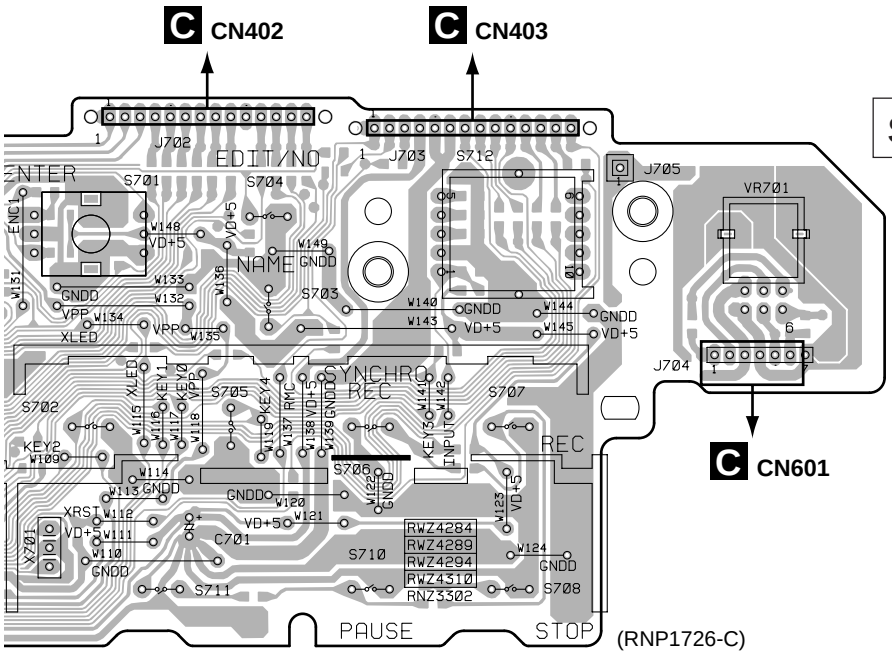


(RNP1726-C)

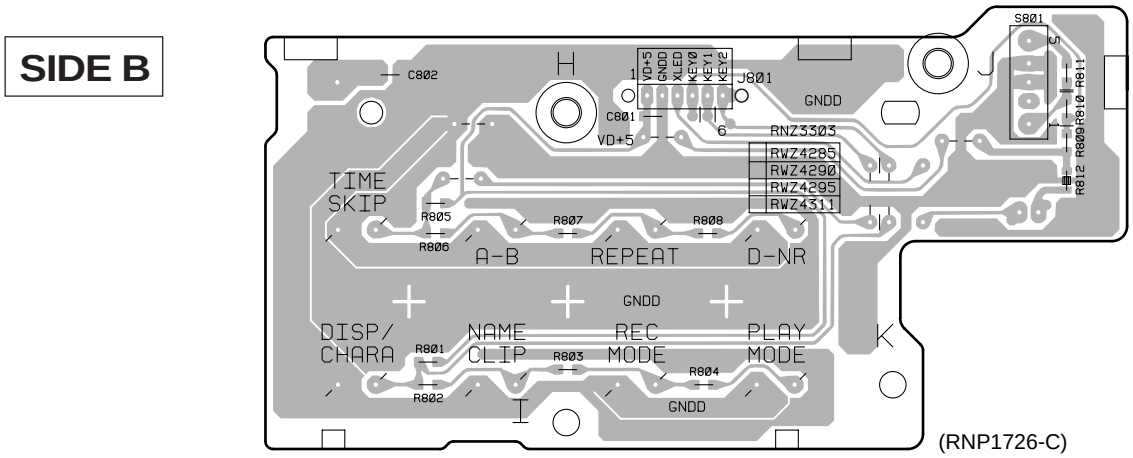
F CONTROL UNIT ASSY

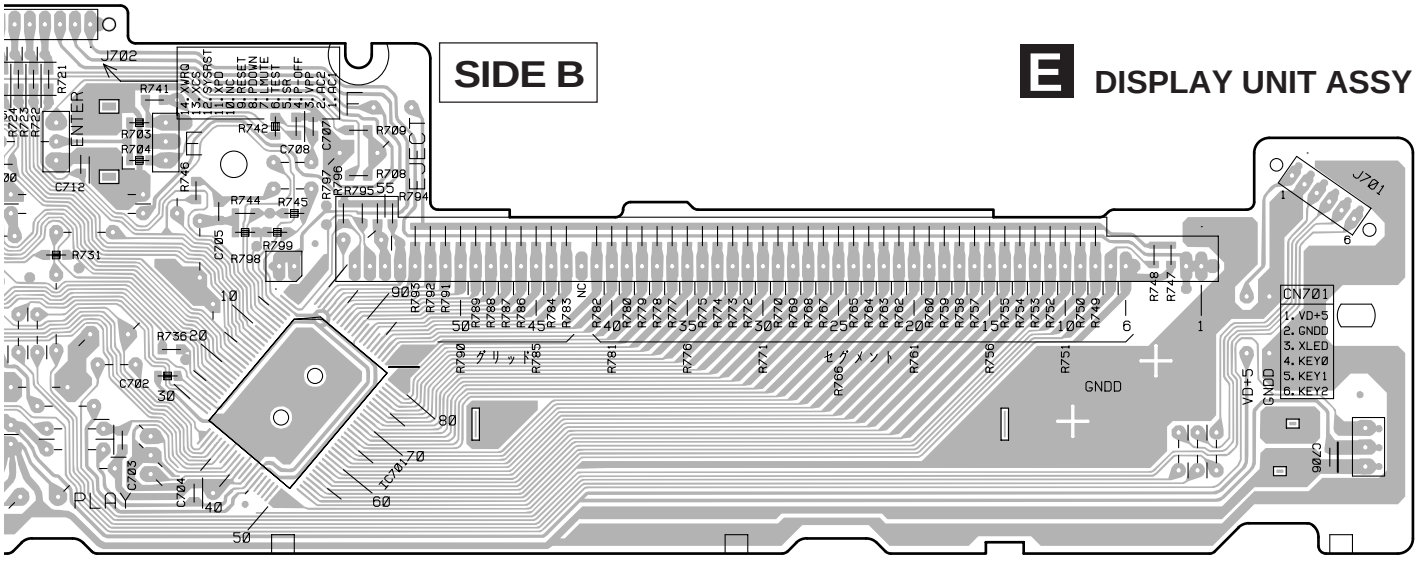


(RNP1726-C)



F CONTROL UNIT ASSY

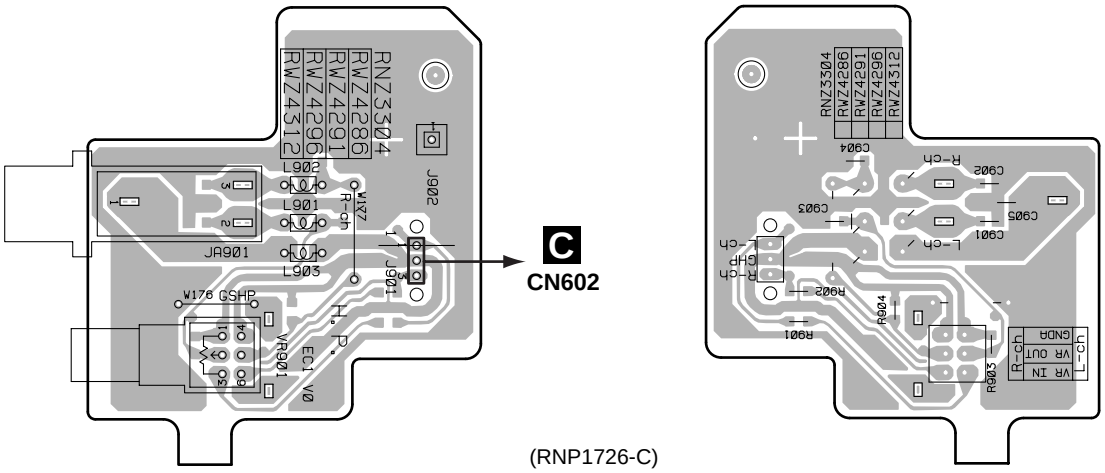




E DISPLAY UNIT ASSY

4.5 HEADPHONE UNIT ASSEMBLY

G **HEADPHONE UNIT ASSY**



(RNP1726-C)

SIDE A **SIDE B**

5. PCB PARTS LIST

NOTES :
- *Parts marked by "* NSP *" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560 Ω → 56 × 10 [1] → 561 ..... RD1/4PU 5 6 1 J
47k Ω → 47 × 10 [3] → 473 ..... RD1/4PU 4 7 3 J
0.5 Ω → R50 ..... RN2H R 5 0 K
1 Ω → 1R0 ..... RS1P 1 R 0 K

Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62k Ω → 562 × 10 [1] → 5621 ..... RN1/4PC 5 6 2 1 F

■ LIST OF WHOLE PCB ASSEMBLIES

Mark	Symbol and Description	Part No.				Remarks
		MJ-D707			MJ-17D	
		KU	MY	MY/GR/FR	KU	
NSP	MD MECHANISM ASSY	RXA1773	RXA1773	RXA1773	RXA1773	
	└ CORE UNIT ASSY	RWM2041	RWM2041	RWM2041	RWM2041	
	├ CORE MAIN UNIT ASSY	RWZ4271	RWZ4271	RWZ4271	RWZ4271	
	└ CORE SW UNIT ASSY	RWZ4272	RWZ4272	RWZ4272	RWZ4272	
NSP	MOTHER UNIT ASSY	RWM2051	RWM2048	RWM2048	RWM2047	
	├ MAIN UNIT ASSY	RWZ4309	RWZ4293	RWZ4293	RWZ4288	
	├ DISPLAY UNIT ASSY	RWZ4310	RWZ4294	RWZ4294	RWZ4289	
	├ CONTROL UNIT ASSY	RWZ4311	RWZ4295	RWZ4295	RWZ4290	∗1
	├ HEADPHONE UNIT ASSY	RWZ4312	RWZ4296	RWZ4296	RWZ4291	∗2
	└ TRANS UNIT ASSY	RWZ4313	RWZ4297	RWZ4297	RWZ4292	

∗1 Although RWZ4311, RWZ4295 and RWZ4290 are different in part number, they have the same service parts.
∗2 Although RWZ4312, RWZ4296 and RWZ4291 are different in part number, they have the same service parts.

■ CONTRAST OF PCB ASSEMBLIES

D TRANS UNIT ASSY

RWZ4313, RWZ4297 and RWZ4292 are constructed the same except for the following:

Mark	Symbol and Description	Part No.			Remarks
		RWZ4313	RWZ4297	RWZ4292	
	L201	Not used	VTL–262	Not used	
	L202, L203	Not used	RTF1167	Not used	

E DISPLAY UNIT ASSY

RWZ4310, RWZ4294 and RWZ4289 are constructed the same except for the following:

Mark	Symbol and Description	Part No.			Remarks
		RWZ4310	RWZ4294	RWZ4289	
	R798	RS1/10S104J	Not used	Not used	
	R799	Not used	RS1/10S104J	RS1/10S104J	

C MAIN UNIT ASSY

RWZ4309, RWZ4293 and RWZ4288 are constructed the same except for the following:

Mark	Symbol and Description	Part No.			Remarks
		RWZ4309	RWZ4293	RWZ4288	
	D401	DAP202K	Not used	DAP202K	
	D402	1SS133X	Not used	1SS133X	
	L304–L307, L406	Not used	RTF1167	Not used	
	C313	CEAT332M16	PCH1120 (3300µF/16V)	PCH1120 (3300µF/16V)	
	C314	CEAT222M16	PCH1121 (2200µF/16V)	PCH1121 (2200µF/16V)	
	C315, C319	CEAT470M16	PCH1123 (470µF/6.3V)	PCH1123 (470µF/6.3V)	
	C419	CKSQYF104Z25	Not used	CKSQYF104Z25	
	C503, C504	CEAT470M16	CEBA220M25	CEBA220M25	
	C505–C508, C601	CEAT470M16	RCH1133 (100µF/10V)	RCH1133 (100µF/10V)	
	C551, C552	CEAT2R2M50	CEBA2R2M50	CEBA2R2M50	
	C559, C560	CEAT470M16	CEBA470M10	CEBA470M10	
	C604, C612, C616	CEAT470M16	VCH1081 (220µF/10V)	VCH1081 (220µF/10V)	
	C614	CEAT221M6R3	VCH1081 (220µF/10V)	VCH1081 (220µF/10V)	
	C619, C621	CEAT470M16	PCH1124 (47µF/50V)	PCH1124 (47µF/50V)	
	R412, R437	RS1/10S102J	Not used	RS1/10S102J	
	R413	RS1/10S274J	Not used	RS1/10S274J	
	R455	Not used	RS1/10S0R0J	Not used	
	R618	RS1/10S622J	RS1/10S101J	RS1/10S101J	
	JA405, JA406 JACK (Remote Control)	RKN1004	Not used	RKN1004	

■ PARTS LIST FOR MJ-D707/KU

Mark	No.	Description	Part No.
		A CORE MAIN UNIT ASSY	
		SEMICONDUCTORS	
	IC112		BA4510F
	IC116		BD7910FV
	IC110		BR93LC56F
	IC101		IR3R55M
	IC102		LR376481
	IC106		M56758FP
	IC103		M5M4V4400CTP-7
	IC104		PD5450A
⚠	IC114		RN5RG32AA
	IC113		TC74ACT08FT
	IC109		TC74VHC08FT
	IC108		TC9246F
	Q102		2SA1036K
	Q101		2SB1188
	Q103, Q104		DTC124EU
	D101, D102		SB02-09CP
		COILS AND FILTERS	
	L101, L103, L104, L107 (4.7 µH)		DTL1024
	L110		QTL1015
	L108 (47 µH)		RTL1003
	L102 (0.47 µH)		RTL1007
		SWITCHES AND RELAYS	
	S101, S102		RSF1012
		CAPACITORS	
	C115		CCSQCH101J50
	C119, C120		CCSQCH120J50
	C146		CCSQCH121J50
	C125		CCSQCH150J50
	C141–C144, C155		CCSQCH220J50
	C174–C178		CCSQCH271J50
	C194		CCSQCH331J50
	C139		CEV101M4
	C131, C166		CEV101M6R3
	C147, C148, C201		CEV470M6R3

Mark	No.	Description	Part No.
	C112		CEV4R7M35
	C193		CKSQYB102K50
	C126, C1000		CKSQYB103K50
	C153, C154		CKSQYB153K50
	C158		CKSQYB222K50
	C196–C198		CKSQYB223K50
	C103, C145		CKSQYB273K50
	C171		CKSQYB332K50
	C149, C170		CKSQYB333K50
	C106, C159		CKSQYB472K50
	C127		CKSQYB474K16
	C156, C157		CKSQYB562K50
	C151, C152, C160, C162		CKSQYB821K50
	C130, C132, C134, C137, C138		CKSQYF104Z25
	C161, C163, C164, C173, C195		CKSQYF104Z25
	C202–C205		CKSQYF104Z25
	C101, C102, C104, C108		CKSQYF105Z16
	C113, C114, C116–C118		CKSQYF105Z16
	C121, C122, C124, C128		CKSQYF105Z16
	C135, C136, C140, C165, C169		CKSQYF105Z16
	C207, C208		CKSQYF105Z16
	C123		CKSQYF473Z25
	C105, C107		CKSQYF474Z16

RESISTORS

	R105		RS1/8S270J
	Other Resistors		RS1/10S□□□J

OTHERS

	CN104	30P CONNECTOR	RKN1039
	X101	(33.8688MHz)	RSS1055
	CN105	ZR CONNECTOR	S2B-ZR-SM3A
	CN102	2P CONNECTOR	S2B-ZR-SM3A-R
	CN101	CONNECTOR	SFV28R-1ST
	CN103	CONNECTOR	SFW7R-2ST

B CORE SW UNIT ASSY

SWITCHES AND RELAYS

	S701		RSF1009
	S702		RSF1010

RESISTORS

	All Resistors		RS1/10S□□□J

OTHERS

	CN701	CONNECTOR	SFW7R-1ST

C MAIN UNIT ASSY

SEMICONDUCTORS

⚠	IC301, IC303, IC305 (400mA/125V)		AEK7004
⚠	IC405 (200mA/125V)		AEK7023
	IC602		AK7712A-VQ
⚠	IC306		BA05T
	IC604		M5218AFP
	IC601		NJM2100D
	IC406		NJM4558MD
	IC603		NJM4580D
⚠	IC302		NJM7805FA
	IC307		S-806D
	IC605		SRM2B256SLMX70
	IC404		TC74HC153AF
	IC401, IC402		TC74HCT08AF
	IC403		TC74HCU04AF
	IC407		TC9246F
	Q303		2SA1037K
⚠	Q304		2SC2412K
	Q501–Q504		2SD2114K
	Q601, Q602		DTA124EK
	Q603–Q605		DTC124EK
⚠	D307		1SR139-400-TA
	D308, D402, D602		1SS133X
	D401, D603		DAP202K
⚠	D303–D306		S5566G(TPB2)

COILS AND FILTERS

	L403, L603		LFA100J
	L301, L302, L404		RTF1162
	L602		RTF1163
	L401		RTF1165
	L402, L601, L604, L605, L607		RTF1167

CAPACITORS

	C445		CCSQCH101J50
	C509, C510		CCSQCH120J50
	C440		CCSQCH150J50
	C411, C413, C446		CCSQCH220J50
	C433, C627, C628		CCSQCH221J50
	C412, C423, C617		CCSQCH470J50
	C321, C403, C406, C415, C417		CEAT101M10
	C421, C435, C443		CEAT101M10
	C551, C552		CEAT2R2M50
	C614		CEAT221M6R3
	C314		CEAT222M16
	C410		CEAT330M50
	C313		CEAT332M16
	C315, C319, C444, C503–C508		CEAT470M16
	C559, C560, C565, C566, C601		CEAT470M16
	C604, C612, C616, C619, C621		CEAT470M16
	C324		CEAT471M6R3
	C624		CEAT4R7M50
	C442		CFTYA474J50
	C432, C447, C561, C562		CKSQYB102K50
	C625, C626		CKSQYB102K50
	C441, C449		CKSQYB103K50
	C553–C558		CKSQYB152K50
	C430, C431		CKSQYB222K50
	C511, C512		CKSQYB332K50
	C409, C429		CKSQYF103Z50
	C401, C402, C404, C405, C414		CKSQYF104Z25
	C416, C418–C420, C422, C434		CKSQYF104Z25
	C603, C605–C611, C613, C615		CKSQYF104Z25
	C629		CKSQYF105Z16
	C438, C439		CKSQYF473Z25
	C323 (1.00F/5.5V)		RCH1152

Mark	No.	Description	Part No.
RESISTORS			
	R579, R580, R616, R617		RD1/4PU101J
	R441		RD1/4PU120J
	R559, R560		RN1/10SE1202D
	Other Resistors		RS1/10S□□□J
OTHERS			
	CN602	3P JUMPER CONNECTOR	52147-0310
	CN402, CN403		52147-1410
		14P JUMPER CONNECTOR HEAT SINK	ANH-575
	CN601	KR CONNECTOR	B6B-PH-K-S
	JA401	OPTICAL LINK IN	GP1F32R
	JA404	OPTICAL LINK OUT	GP1F32T
	CN301	11P JUMPER CONNECTOR	KPD11
	JA403	1P JACK	RKB1021
	JA601	4P JACK with SHIELD PLATE	RKB1032
	JA405, JA406	JACK	RKN1004
		PCB BINDER	VEF1040
	CN401	30P CONNECTOR	VKN1206
	KN301, KN601	EARTH METAL FITTING	VNF1084

E DISPLAY UNIT ASSY

Mark	No.	Description	Part No.
SEMICONDUCTORS			
	IC701		PDG222B
SWITCHES AND RELAYS			
	S712		RSB1027
	S701		RSC1003
	S702–S711		VSG1009
CAPACITORS			
	C701		CEAL220M6R3
	C707, C708, C712		CKSQYB103K50
	C703, C709		CKSQYF103Z50
	C702, C704–C706, C710, C711		CKSQYF104Z25
RESISTORS			
	VR701 (50 kΩ–A)		RCV1118
	Other Resistors		RS1/10S□□□J
OTHERS			
		6P CABLE HOLDER	51048-0600
	J701	6P PARALLEL WIRE	D20PYY0615E
	J702, J703	14P JUMPER WIRE	D20PYY1425E
		REMOTE RECEIVER UNIT	GP1U27X
	V701	FL TUBE	RAW1164
	J704	6P CONNECTOR ASSY	RKP1812
	X701	(8.388MHz)	RSS1042

F CONTROL UNIT ASSY

Mark	No.	Description	Part No.
SEMICONDUCTORS			
	D801		SLP9118C51H
SWITCHES AND RELAYS			
	S801		RSH1041
	S802–S809		VSG1009
CAPACITORS			
	C801		CKSQYF104Z25
RESISTORS			
	All Resistors		RS1/10S□□□J
OTHERS			
		6P CABLE HOLDER	51048-0600

G HEADPHONE UNIT ASSY

Mark	No.	Description	Part No.
COILS AND FILTERS			
	L901–L903		RTF1167
CAPACITORS			
	C901, C902		CKSQYF104Z25
	C903, C904		CCSQCH101J50
RESISTORS			
	VR901 (500 Ω–B)		RCV1123
	Other Resistors		RS1/10S□□□J
OTHERS			
	901	3P CABLE HOLDER	51048-0300
	J901	3P JUMPER WIRE	D20PYY0310E
	JA901	HEADPHONE JACK	RKN1002

D TRANS UNIT ASSY

Mark	No.	Description	Part No.
SEMICONDUCTORS			
⚠	IC201 (3.5A/125V)		AEK7017
⚠	IC202		NJM7805FA
	D205		1SS133X
	D204		DAN202K
⚠	D202		MTZJ11B
⚠	D203		S2VB20
⚠	D201		S5566G (TPB2)
SWITCHES AND RELAYS			
⚠	S201		RSA1001
CAPACITORS			
⚠	C206 (10000pF/AC250V)		ACG7020
	C219		CEAT101M50
	C217		CEAT470M16
	C218		CEAT4R7M50
	C203–C205, C207–C214		CFTLA104J50
	C216 (15000pF/16V)		RCH1124
RESISTORS			
⚠	R201		RFA1/4PL4R7J
	Other Resistors		RS1/10S□□□J
OTHERS			
		CABLE HOLDER (11P)	51052-1100
	H201, H202	FUSE CLIP	AKR1004
		HEAT SINK	ANH-575
⚠		TERMINAL	RKC-061

6. ADJUSTMENT

■ JIGS AND MEASURING INSTRUMENTS

- **Thermometer**
- **Oscilloscope**
- **Optical Power Meter**
- **Jitter Meter**

- **Test Disc**

For servo system adjustment GGF1328 (MMD-212)
For recording/playback inspection ..... GGF1328 (MMD-212), GGF1277, TGYS1 (or MMD-110), Commercial discs

6.1 NECESSARY ADJUSTMENT POINTS

When	Adjustment points
Exchange PICKUP	③,④ → Page 44, 45
Exchange Servo Base Assy (SPINDLE MOTOR)	③,④ → Page 44, 45
Exchange CORE MAIN UNIT ASSY	④ → Page 44, 45
Exchange MD HEAD	———
Exchange Loading Mechanism Assy	———
Exchange Servo Mechanism Assy	③,④ → Page 44, 45
Exchange MD Mechanism Assy (Loading Mechanism Assy + Servo Mechanism Assy)	③,④ → Page 44, 45

6.2 TEST MODE

There are two test modes: test mode 1 for main unit operation check and test mode 2 for MD mechanism assy adjustment and check.

6.2.1 Test Mode 1 (main unit operation check)

■ How to enter into test mode 1

1) Hold the “ENTER” key and the “STOP” key depressed and press the POWER switch.
2) SYSTEM TEST will be displayed on the FL display.

● Operation check for the operation keys

Operation Keys	FL Display	Contents
REC (●)		Same operation as in normal mode
PLAY (►)		
STOP (■)		
JOG (I◄◄, ►►I)		
CUE (►►)		
REV (◄◄)		
EJECT (▲)		Disc ejection (no TOC writing)
DIGITAL-NR	D S P O K ! !	Normal DSP IC operation
	D S P E R R O R 1	Communication between the DSP IC and the system controller is not possible.
	D S P E R R O R 2	Calculation in the DSP IC not correct

● Operation check for other keys

When each key is pressed, display according to the following table shall be made on the FL display.

Operation Keys		FL Display
TIMER SW	OFF	S Y S T E M T E S T
	REC	Entire FL lit
	PLAY	Entire FL not lit
A–B		A – B
REPEAT		R E P E A T
PLAY MODE		P L A Y M O D E
TIME SKIP		T I M E S K I P
NAME CLIP		N A M E C L I P
DISPLAY/CHARA		D I S P
REC MODE		R E C M O D E

Operation Keys	FL Display
JOG (Push)	E N T E R
EDIT/NO	E D I T / N O
NAME	N A M E
SYNCHRO REC	S Y N C H R O R E C

■ Cancellation of Test Mode 1

Press the POWER switch.

6.2.2 Test Mode 2 (MD Mechanism Assy Adjustment, Check)

① Temperature Check (Please perform this check soon after the power has been switched on.)

Note: When IC101 (RF-AMP) or IC104 (mechanical controller) has been exchanged or when a correction changing VD+3 has been made, be sure to correctly perform all steps up to step 7.

Step No.	Operation Keys and Operation Method	FL Display	Status	Remarks
1	Power ON while holding the ENTER key and the PLAY key depressed.	EJECT	Test mode	
2	Press the NAME CLIP key.	TEMP ○○ □□	The microcomputer starts measuring.	○○: Measuring value □□: Set value
3	When □□ is 80 or more at this time, the adjustment is OK (step 4 and following can be omitted).		End	
When □□ is 80 (not passed)		TEMP ○○ 8 0	80 is the default value (unadjusted).	
4	Measure the ambient temperature T (°C) andcheck hat the measuring value (○○) is within the standard in regard to the microcomputer set value (□□). Note: When the indication of the measuring value (○○) is not stable, and the ambient temperature T (°C) is 25 °C or less, set to the lower value. When the ambient temperature is over 25 °C, set to the higher value.	TEMP ○○ □□ μ-com Measuring value ↑ ↑ μ-com Set value		
5	Change □□ with the TIME SKIP key (UP) and the A-B key (DOWN).	TEMP 7B 7B		
6	Press the EDIT/NO key.	No Disc	Writing to EEPROM is made and return is made automatically from test mode to normal mode.	

Room Temperature [T (°C)]	hex= (○○ – □□)
11.6 to 16.9	+1 to +3
17.0 to 22.3	0 to +2
22.4 to 27.6	–1 to +1
27.7 to 33.0	0 to –2
33.1 to 38.4	–1 to –3

When the microcomputer value is

79 (–)
7A
7B
7C
7D (+)

② Laser Power Check

Step No.	Operation Keys and Operation Method	FL Display	Status	Remarks
1	Power ON while holding the ENTER key and the PLAY key depressed.	EJECT	Test mode	Laser Wavelength: 780 nm
2	Press the NAME key.	ppw	PLAY power output status	
3	Measure the laser power with an optical power meter.	ppw		
4	At this time, check that the measuring value (PLAY power) meets the standard value of the table on the right. Note: When the standard value on the right is applied, the numerical value immediately after entry into test mode 2 shall be taken as the standard.	ppw	TEMP ○○ □□ μ-com Measuring value ↑ ↑ μ-com Set value	May be omitted.
5	Press the NAME key.	rpw	REC power output status	
6	At this time, check that the measuring value (REC power) meets the standard value of the table on the right.	rpw		
7	Press the STOP key.		The LD goes out.	

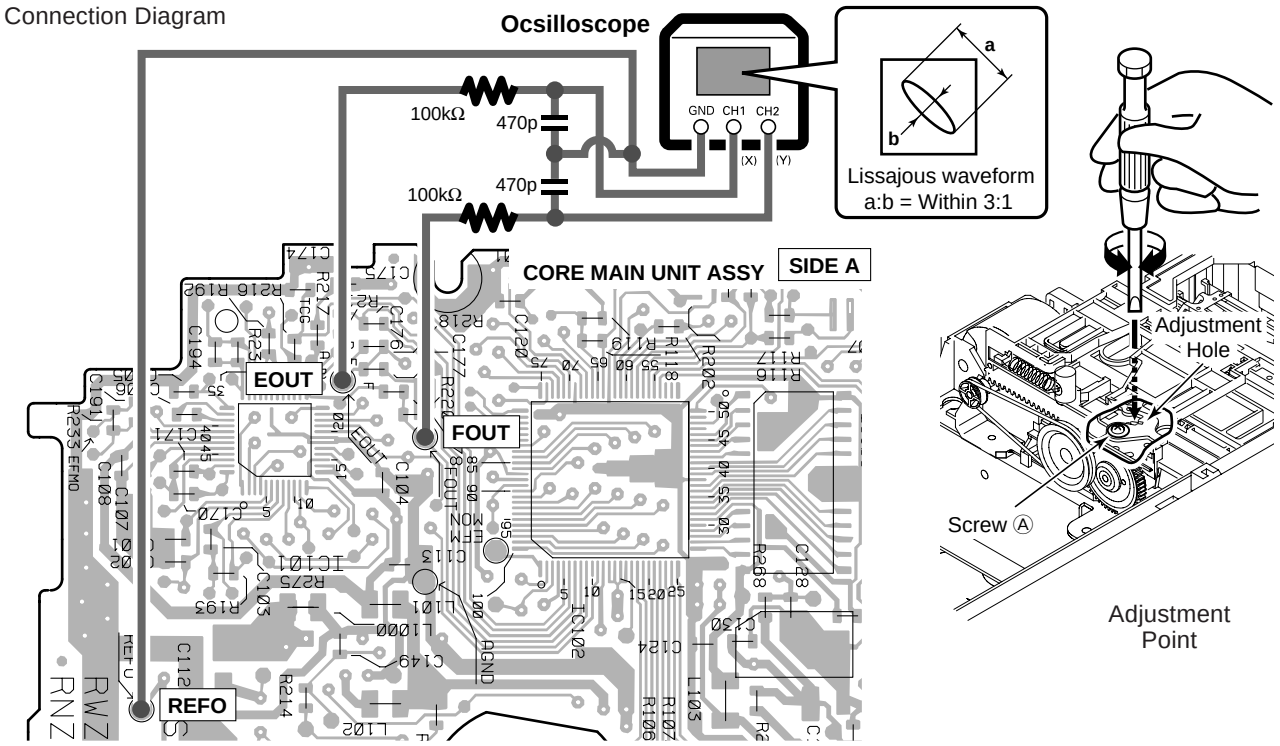
hex = (○○ – □□)	Standard Value (mW)
+02 to +04	0.69±0.12
–01 to +01	0.67±0.1
–02 to –04	0.63±0.1

hex = (○○ – □□)	Standard Value (mW)
+02 to +04	6.18±0.93
–01 to +01	5.79±0.87
–02 to –04	5.47±0.82

③ Grating Adjustment

Step No.	Operation Keys and Operation Method	FL Display	Status	Remarks
1	Power ON while holding the ENTER key and the PLAY key depressed.	EJECT	Test mode	
2	Insert the test disc GGF1328 (MMD-212).	LOADING GRT AJST	Grating adjustment status	
3	Press the PLAY key.	LON : LAg : GEG :	Playback is started in tracking open status. (The servo is closed only for focus and spindle.)	
4	Connect an oscilloscope according to the following connection diagram and loosen the screw Ⓐ at the side of the adjustment hole. Turn the hole with a screwdriver until the Lissajous waveform becomes as shown in the figure, and then tighten the screw Ⓐ.	GRT AJST	Lissajous waveform a:b = Within 3:1	
5	Press the STOP key.		Adjustment end	

Connection Diagram



④ Preliminary Adjustment

Step No.	Operation Keys and Operation Method	FL Display	Status	Remarks
1	Power ON while holding the ENTER key and the PLAY key depressed.	EJECT	Test mode	
2	Insert the test disc GGF1328 (MMD-212).	LOADING GRT AJST		
3	Press the REC MODE key (until RST YOBI is displayed).	RST YOBI		
4	Press the PLAY key.		Preliminary adjustment result display mode	
5	Press the REC MODE key several times and display the GTG (GROOV TRACKING GAIN) value.	GTG : □		
6	Use the TIME SKIP key (UP) and the A-B key (DOWN) to adjust the value of □ to 4 or more.	GTG : **4**		

④ Preliminary Adjustment

Step No.	Operation Keys and Operation Method	FL Display	Status	Remarks
7	Press the STOP key.	RST YOBI	Return to menu display	
8	Press the REC MODE key (until AUT YOBI is displayed).	AUT YOBI	Preliminary adjustment mode	
9	Preliminary adjustment starts when the PLAY key is pressed.	HAo : LAg : PTG : | Can't ADJ. COMPLETE	 Defective adjustment (problem with the servo system) Adjustment end	
10	Press the STOP key.	AUT YOBI	Return to menu display	
11	Press the EDIT/NO key.	EEPROM W Toc Reading GGF1328 (MMD-212)	Writing to the EEPROM	

Note: When this adjustment is performed after defocus adjustment has been performed, defocus is returned to the initial status, and defocus adjustment must be performed.

⑤ Normal adjustment

Step No.	Operation Keys and Operation Method	FL Display	Status	Remarks
1	Power ON while holding the ENTER key and the PLAY key depressed.	EJECT	Test mode	
2	Insert the test disc GGF1328 (MMD-212).	LOADING GRT AJST		
3	Press the REC MODE key (until AUTO AJST is displayed).	AUTO AJST	Normal adjustment mode	
4	Normal adjustment starts when the PLAY key is pressed.	PEG : HAG: | Can't ADJ. COMPLETE	 Defective adjustment (problem with the servo system) Adjustment end	
5	Press the STOP key.	AUTO AJST	Return to menu display	

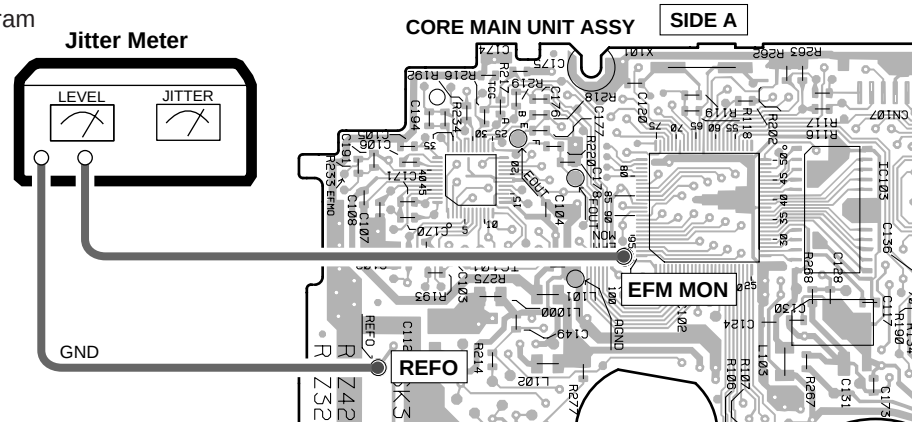
⑥ Defocus adjustment

Step No.	Operation Keys and Operation Method	FL Display	Status	Remarks
1	Power ON while holding the ENTER key and the PLAY key depressed.	EJECT	Test mode	
2	Insert the test disc GGF1328 (MMD-212).	LOADING GRT AJST		
3	Press the REC MODE key (until deFO AJST is displayed).	deFO AJST		
4	Press the PLAY key. of ○○○○ c □□□□ Deforcus Value ↑ ↑ C1 Error Value	PEG : FESpp : of000c0015	Defocus mode is entered, and after automatic execution of normal adjustment, the C1 error at the time of focus offset 0 is displayed.	
5	Check the jitter value and end the adjustment when the intermediate jitter value is 29 nsec or less.			
6	Press the NAME CLIP key.	of+04 c0032	The C1 error with application of a focus offset of about 0.4 μm on the + side is displayed. The jitter value (J+) at this time is recorded.	

⑥ Defocus adjustment

Step No.	Operation Keys and Operation Method	FL Display	Status	Remarks
7	Press the NAME CLIP key.	of-04 c0020	The C1 error with application of a focus offset of about 0.4 µm on the – side is displayed. The jitter value (J–) at this time is recorded.	
8	When J+ is larger than J-, press the REC MODE key and display the C1 error when the focus offset is applied up to +0.4 µm. (Do nothing when J- is larger than J+.)	of+04 c0032		
9	Change the value with CUE (◄◄)/REV (◄◄) until the value becomes the same.	of+04 c0032 of+03 c0025 of+02 c0020	When the smaller offset of the jitter value has been corrected mistakenly, press the NAME key and return to step 4.	
10	Press the PLAY key.	COMPLETE	The mean value of the changed set value and the offset of the other setting limit is written into the EEPROM as the compensation offset.	
11	Power OFF		Test mode is ended.	

Connection diagram

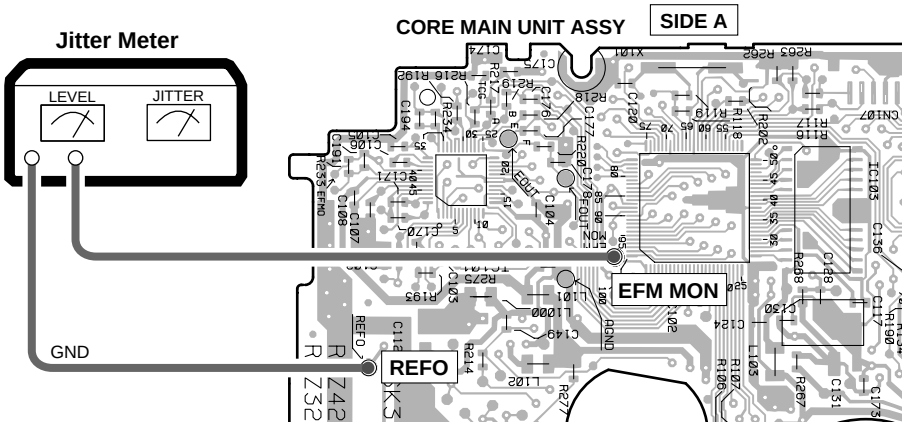


⑦ Jitter/C1 Error Check at the time of Playback

Step No.	Operation Keys and Operation Method	FL Display	Status	Remarks
1	Power ON while holding the ENTER key and the PLAY key depressed.	EJECT	Test mode	
2	Insert the test disc GGF1328 (MMD-212).	LOADING GRT AJST		
3	Perform " ■ Normal Adjustment " (step 3, step 4).	AUTO AJST		
4	Press the NAME CLIP key.	TEST PLAY	TEST PLAY mode	
5	Press the NAME key and display the inner circumference address.	ADRES 0050		
6	Press the PLAY key and display the C1 error for the inner circumference.	a0050 c0015	Check that the jitter value meets the standard value of the following table. **GGF1328 (MMD-212) jitter value** Inner circumference: 31 nsec or less Intermediate circumference: 29 nsec or less Outer circumference: 29 nsec or less	
7	Press the REC key.	A0062 c0013 AVE. c0012	Seven data are acquired, the largest and the smallest value are discarded, and fixed display is made for the mean value of the remaining five data. Check that this value is **200** or less.	

⑦ Jitter/C1 Error Check at the time of Playback

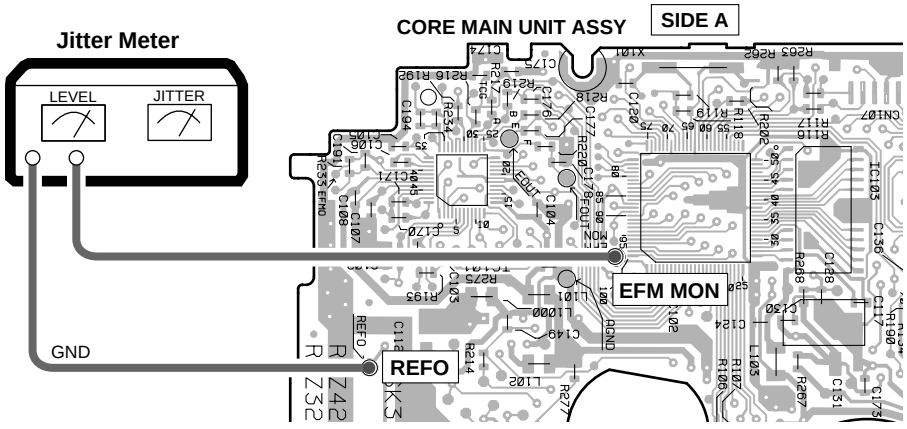
Step No.	Operation Keys and Operation Method	FL Display	Status	Remarks
8	Press the REC key.	a006F c0017	The fixed display of the C1 error is ended.	
9	Press the STOP key.	TEST PLAY		
10	Press the NAME key and display the inner circumference address.	ADRES 0050		Intermediate and outer circumference may be omitted.
11	Press the NAME CLIP key and display the intermediate circumference address. Perform steps 6 to 9 in this condition.	ADRES 03C0 a03C0 c0009 TEST PLAY		
12	Press the NAME key and display the inner circumference address.	ADRES 0050		
13	Press the NAME CLIP key twice to display the outer circumference address. Perform steps 6 to 9 in this condition.	ADRES 0700 a0700 c0008 TEST PLAY		
14	Press the EJECT key, eject the test disc GGF1328 (MMD-212), and insert TGYS1 (or MMD-110.)	EJECT LOADING GRT AJST		
15	Perform steps 3 to 13 and check the jitter/C1 error with the test disc TGYS1 (or MMD-110).	a0062 c0009 a03d2 c0007 a0712 c0006	Check that the jitter value meets the standard value of the following table. **TGYS1 (or MMD-110) jitter value** Inner circumference: 29 nsec or less Intermediate circumference: 27 nsec or less Outer circumference: 27 nsec or less	
16	Press the EJECT key.	EJECT	The test disc TGYS1 (or MMD-110) is ejected.	
17	Power OFF		Test mode is ended.	



Connection diagram

■ Jitter/C1 Error Check at the time of Recording/Playback

Step No.	Operation Keys and Operation Method	FL Display	Status	Remarks
1	Power ON while holding the ENTER key and the PLAY key depressed.	EJECT	Test mode	
2	Insert the test disc (GGF1277).	LOADING GRT AJST		
3	Perform " ■ Normal Adjustment " (step 3, step 4).	AUTO AJST		
4	Press the NAME CLIP key twice.	TEST REC	TEST REC mode	
5	Press the NAME key and display the inner circumference address.	a0050 pw0D		
6	When the PLAY key is pressed, TEST REC starts, and when 25 addresses or more have been sent, stop by pressing the STOP key.	a0069 pw0D TEST REC	Note: When the initial address (0050) part of the inner circumference (or intermediate/ outer circumference) has been used 1000 times or more, press the CUE key and shift the address by 10hex. (The address is shifted (up to 10 times) according to the use frequency of the disc.)	Intermediate and outer circumference may be omitted.
7	Press the NAME key and display the inner circumference address.	a0050 pw0D		
8	Press the NAME CLIP key and display the intermediate circumference.	a03C0 pw0D		
9	Perform step 6.	a03D9 pw0D TEST REC		
10	Press the NAME key and display the inner circumference address.	a0050 pw0D		
11	Press the NAME CLIP key twice and display the outer circumference address.	a0700 pw0D		
12	Perform step 6.	a0719 pw0D TEST REC		
13	Press the NAME CLIP key.	TEST PLAY	TEST PLAY mode	
14	Perform steps 5 to 13 of " ■ Jitter/C1 Error Check at the time of Playback ". At the time of self-recording, wait for seven addresses after TEST PLAY start, and then press the REC key and enter into mean value mode. (Good recording may not be possible for several addresses at the beginning.)	a0069 c0009 a03D9 c0007 a0719 c0006	Check the jitter/C2 error at the inner/ intermediate/outer circumference of GGF1277, and check that the jitter value satisfies the standard value of the following table. **GGF1277 jitter value** Inner circumference: 33 nsec or less Intermediate circumference: 31 nsec or less Outer circumference: 31 nsec or less	
15	Press the EJECT key.	EJECT	The test disc (GGF1277) is ejected.	
16	Power OFF		Test mode is ended.	



Connection diagram

7. GENERAL INFORMATION

7.1 PARTS

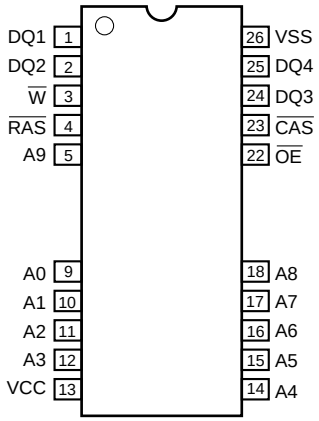
- The information shown in the list is basic information and may not correspond exactly to that shown in the schematic diagrams.

7.1.1 IC

■ M5M4V4400CTP-7 (IC103: CORE MAIN UNIT ASSY)

● DRAM

● Pin Assignment (Top view)

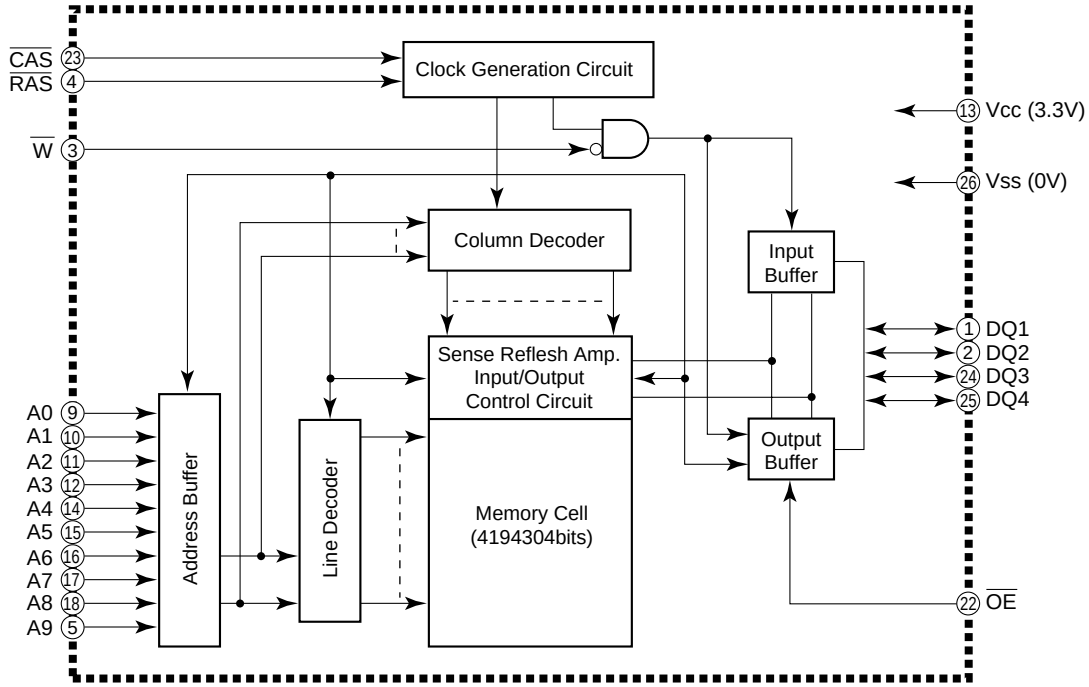


● Pin Function

No.	Name	Description
1	DQ1	Data Input/Output
2	DQ2	
3	$\overline{W}$	Write control input
4	$\overline{RAS}$	Line address strobe input
5	A9	Address input
6 | 8		
9 | 12	A0 | A3	Address input
13	Vcc	Power supply voltage (+3.3 V)

No.	Name	Description
14 | 18	A4 | A8	Address input
19 | 21		
22	$\overline{OE}$	Output-enable input
23	$\overline{CAS}$	Column address strobe input
24	DQ3	Data Input/Output
25	DQ4	
26	Vss	Ground (0 V)

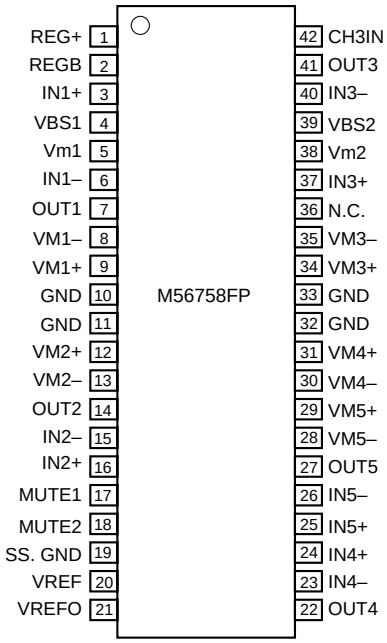
● Block Diagram



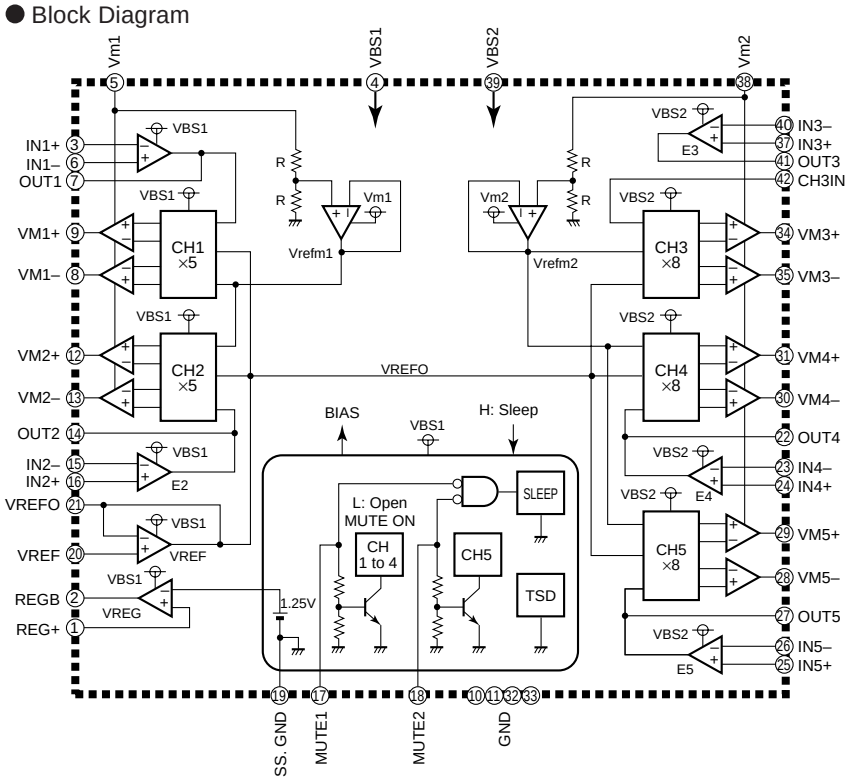
■ M56758FP (IC106: CORE MAIN UNIT ASSY)

● 5-channel Actuator Driver

● Pin Assignment (Top view)



● Block Diagram



● Pin Function

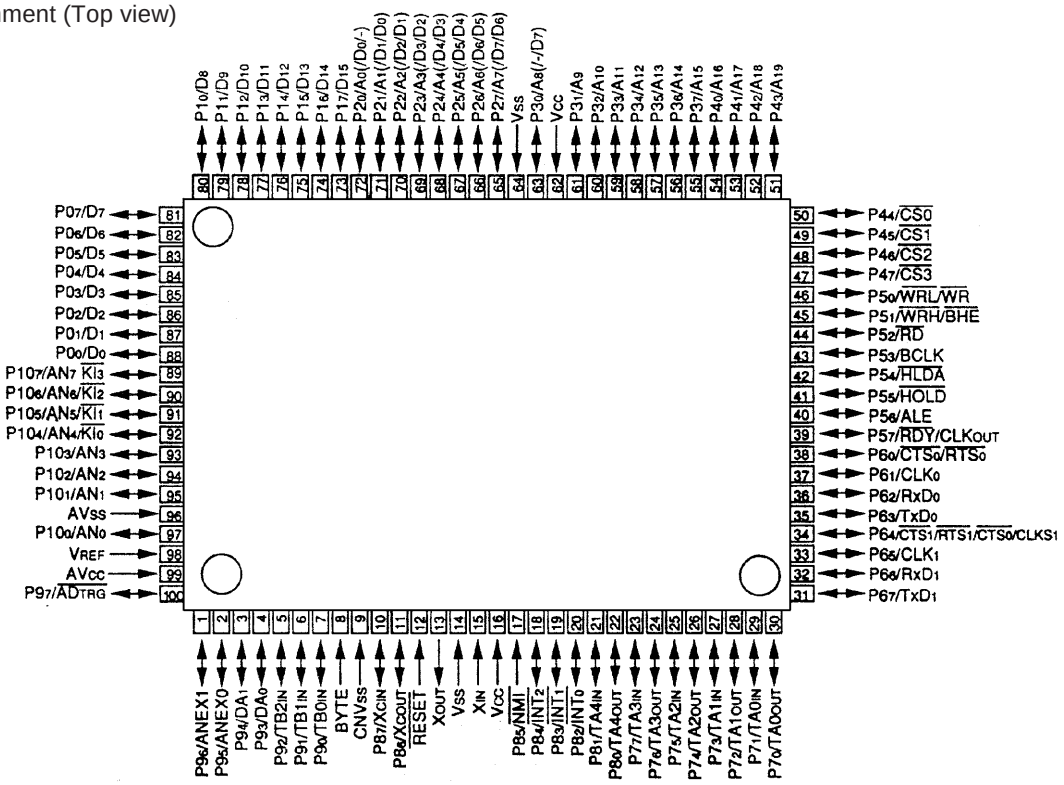
No.	Name	Description
1	REG+	Regulator voltage setting resistor connection terminal
2	REGB	Regulator PNP base connection terminal
3	IN1+	E1 amplifier nonreversed input terminal
4	VBS1	Bootstrap power supply terminal
5	Vm1	Motor power supply terminal
6	IN1–	E1 amplifier reversed input terminal
7	OUT1	E1 amplifier output terminal
8	VM1 (–)	CH1 reversed output terminal
9	VM1 (+)	CH1 nonreversed output terminal
10	GND	Motor GND
11		
12	VM2 (+)	CH2 nonreversed output terminal
13	VM2 (–)	CH2 reversed output terminal
14	OUT2	E2 amplifier output terminal
15	IN2–	E2 amplifier reversed input terminal
16	IN2+	E2 amplifier nonreversed input terminal
17	MUTE1	Mute terminal (CH1 to CH4)
18	MUTE2	Mute terminal (CH5)
19	SS. GND	Small-signal ground
20	VREF	Reference voltage input terminal
21	VREFO	Reference voltage output terminal

No.	Name	Description
22	OUT4	E4 amplifier output terminal
23	IN4–	E4 amplifier reversed input terminal
24	IN4+	E4 amplifier nonreversed input terminal
25	IN5+	E5 amplifier nonreversed input terminal
26	IN5–	E5 amplifier reversed input terminal
27	OUT5	E5 amplifier output terminal
28	VM5 (–)	CH5 reversed output terminal
29	VM5 (+)	CH5 nonreversed output terminal
30	VM4 (–)	CH4 reversed output terminal
31	VM4 (+)	CH4 nonreversed output terminal
32	GND	Motor GND
33		
34	VM3 (+)	CH3 nonreversed output terminal
35	VM3 (–)	CH3 reversed output terminal
36	N.C.	Not connected
37	IN3+	E3 amplifier nonreversed input terminal
38	Vm2	Motor power supply terminal
39	VBS2	Bootstrap power supply terminal
40	IN3–	E3 amplifier reversed input terminal
41	OUT3	E3 amplifier output terminal
42	CH3IN	E3 amplifier nonreversed input terminal

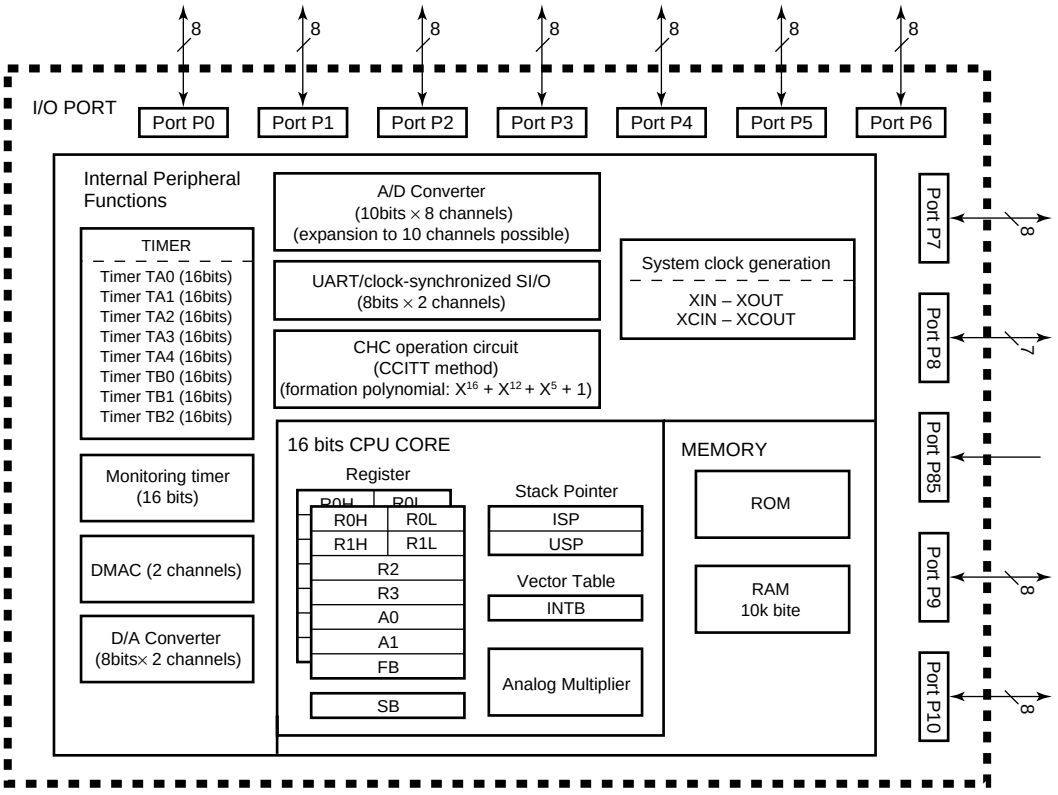
■ PD5450A (IC104: CORE MAIN UNIT ASSY)

● Mechanism Control m-com.

● Pin Assignment (Top view)



● Block Diagram



● Pin Function

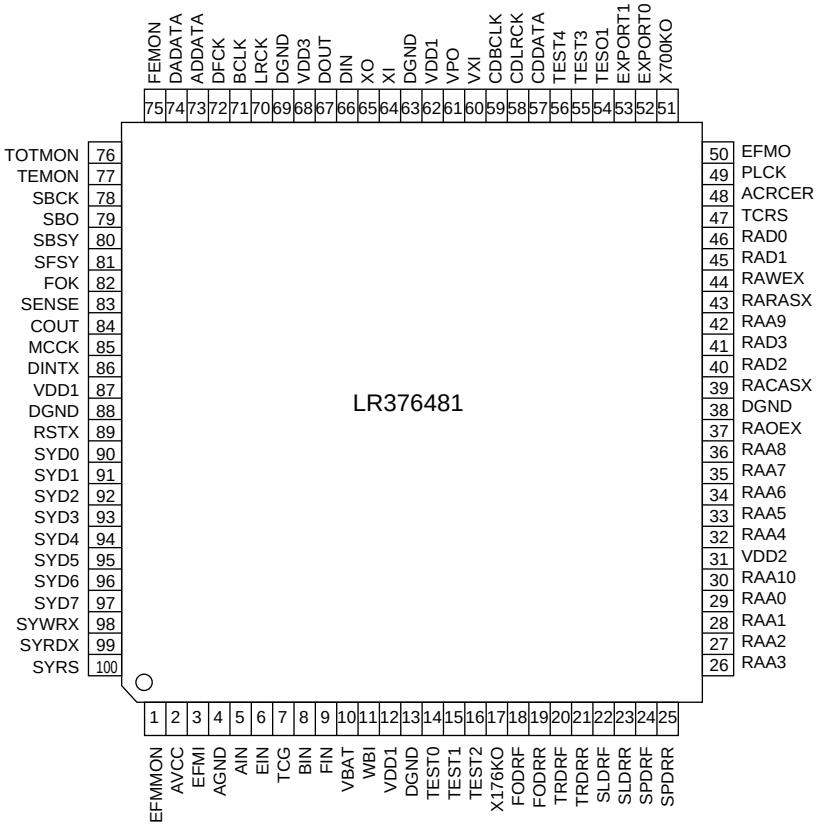
No.	Name	I/O	Description
1 to 7, 100	P96 to P90, P97	I/O	These are 8 bit I/O ports with the same functions as P0. By software selection, it functions as the input terminals for the timers B0 to B2, the output terminals for the D/A converter, the expansion input terminals of the A/D converter, or the A/D trigger input terminals.
8	BYTE	I	This is the terminal for switching the external data bus width. When the level of this terminal is "L", the width is 16 bits, and when it is "H", the width is 8 bits. Please fix it to one of these levels. At the time of single-chip mode, connect it to the Vss terminal.
9	CNVss	I	This is the terminal for processor mode switching. At the time of single-chip mode or at the time of memory expansion mode, connect it to the Vss terminal. At the time of microprocessor mode, connect it to the Vcc terminal.
10 11 17 18 to 22	P87 P86 P85 P84 toP80	I/O I/O I I/O	P80 to P84, P86, and P87 are I/O ports with the same functions as P0. By software selection, they function as the I/O terminals for the timer A4 or the input terminals for external interrupt. P86 and P87 function by software selection as the I/O terminals for the subclock oscillation circuit. In this case, connect a crystal oscillator between P86 (XCOUT terminal) and P87 (XCIN terminal). P85 is an input-only port serving also as $\overline{\text{NMI}}$. When the input of this terminal changes from "H" to "L", and $\overline{\text{NMI}}$ interrupt is generated. The $\overline{\text{NMI}}$ function can not be cancelled by software. A pullup resistance can not be set for this terminal.
12	$\overline{\text{RESET}}$	I	When the input to this terminal is "L", the microcomputer is reset.
13	XOUT	I	This are the I/O terminals of the main clock oscillation circuit. Connect a ceramic oscillator or a crystal oscillator between the terminals XIN and XOUT. In case of an externally generated clock, enter the clock from the XIN terminal and leave the XOUT terminal open.
15	XIN	O	
14	Vss	—	Impress 0 V.
16	Vcc	—	Impress 2.7 V to 5.5 V.
23 to 30	P77 to P70	I/O	These are 8 bit I/O ports with the same functions as P0. By software selection, they function as the I/O terminals for the timers A0 to A3.
31 to 38	P67 to P60	I/O	These are 8 bit I/O ports with the same functions as P0. By software selection, they function as the I/O terminals for the UART0 and UART1.
39 to 46	P57 to P50	I/O	These are 8 bit I/O ports with the same functions as P0. By software selection, they put out a clock with 1/8 or 1/32 of XIN or with the same cycle as XCIN from P57.
	$\overline{\text{WRL}}$/$\overline{\text{WR}}$, $\overline{\text{WRH}}$/$\overline{\text{BHE}}$, $\overline{\text{RD}}$, $\overline{\text{BCLK}}$, $\overline{\text{HLDA}}$, $\overline{\text{HOLD}}$, $\overline{\text{ALE}}$, $\overline{\text{RDY}}$	O O O O O I O I	WRL, WRH, ($\overline{\text{WR}}$, BHE), $\overline{\text{RD}}$, BCLK, HLDA, and ALE signals are put out. Switching between $\overline{\text{WRL}}$ and $\overline{\text{WRH}}$ and between $\overline{\text{BHE}}$ and $\overline{\text{WR}}$ is possible by software. ■ At the time of $\overline{\text{WRL}}$, $\overline{\text{WRH}}$, $\overline{\text{RD}}$ selection When the external data bus width is 16 bits and the $\overline{\text{WRL}}$ signal is at "L" level, writing is done to an even address, and the $\overline{\text{WRH}}$ signal is at "L" level, writing is done to an odd address. Reading is performed when the $\overline{\text{RD}}$ signal is at "L" level. ■ At the time of $\overline{\text{WR}}$, $\overline{\text{BHE}}$, $\overline{\text{RD}}$ selection Writing is done when the $\overline{\text{WR}}$ signal is at "L" level. Reading is done when the $\overline{\text{RD}}$ signal is at "L" level. An odd address is accessed when the $\overline{\text{BHE}}$ signal is at "L" level. Please use this mode when the external data bus width is 8 bits. The microcomputer is in hold status while the input level to the $\overline{\text{HOLD}}$ terminal is "L". During hold status, the output from $\overline{\text{HLDA}}$ is at "L" level. ALE is the signal for address latching. The microcomputer is in ready status while the input to $\overline{\text{RDY}}$ is at "L" level. A clock with the same frequency as the internal clock ø is put out from the BCLK terminal.
47 to 54	P47 to P40	I/O	These are 8 bit I/O ports with the same functions as P0.
	$\overline{\text{CS3}}$ to $\overline{\text{CS0}}$, A19 to A16	O O	The A16 to A19 and $\overline{\text{CS0}}$ to $\overline{\text{CS3}}$ signals are put out. A16 to A19 are the upper 4 bits of the address. $\overline{\text{CS0}}$ to $\overline{\text{CS3}}$ are the chip select signals, and they are used for specification of the access space.

No.	Name	I/O	Description
55 to 61, 63	P37 to P31, P30	I/O	These are 8 bit I/O ports with the same functions as P0.
	A15 to A9, A8	O	The middle 8 bits (A8 to A15) of the address are put out.
	A15 toA9 A8/D7	I/O O	With an external data bus width of 16 bits and multiplex bus setting, time sharing is performed for data (D7) I/O and address (A8) output. Address (A9 to A15) output also is performed.
62	Vcc	—	Impress 2.7 V to 5.5 V.
64	Vss	—	Impress 0 V.
65 to 72	P27 to P20	I/O	These are 8 bit I/O ports with the same functions as P0.
	A7 to A0	O	Output of the lower 8 bits (A0 to A7) of the address is performed.
	A7/D7 to A0/D0	I/O	With an external data bus width of 16 bits and multiplex bus setting, time sharing is performed for data (D0 to D7) I/O and address lower 8 bits (A0 to A7) output.
	A0 A7/D6 to A1/D0	O I/O	With an external data bus width of 16 bits and multiplex bus setting, time sharing is performed for data (D0 to D6) I/O and address (A1 to A7) output. Address (A0) output also is performed.
73 to 80	P17 to P10	I/O	These are 8 bit I/O ports with the same functions as P0.
	D15 to D8	I/O	Data (D8 to D15) I/O is performed at the time of separate bus setting.
81 to 88	P07 to P00	I/O	These are CMOS 8 bit I/O ports. They have direction registers for I/O selection, and input or output port setting is possible individually for each terminal. For an input port, the existence or absence of a pull-up resistance can be set by software in 4 bit units.
	D7 to D0	I/O	Data (D0 to D7) I/O is performed at the time of separate bus setting.
89 to 95, 97	P107 to P101, P100	I/O	This are 8 bit I/O ports with the same functions as P0. By software selection, they function as input terminals of the A/D converter. P104 to P107 also function as input terminals for the key input interrupt function.
96	AVss	—	This is the A/D converter power supply input terminal. Please connect it to the Vss terminal.
98	VREF	I	This is the A/D converter reference voltage input terminal.
99	AVcc	—	This is the A/D converter power supply input terminal. Please connect it to the Vcc terminal.

■ LR376481 (IC102: CORE MAIN UNIT ASSY)

● Encode/Decode/Atrac

● Pin Assignment (Top view)



● Pin Function

No.	Name	I/O	Description
1*	EFMMON	O	EFM monitor output
2	AVCC	–	Analog power supply
3	EFMI	I	EFM signal input from RF amp
4	AGND	–	Analog GND
5	AIN	I	Focus error signal A
6	EIN	I	Tracking error signal E
7	TCG	I	Track cross signal
8	BIN	I	Focus error signal B
9	FIN	I	Tracking error signal F
10*	VBAT	I	Power-supply voltage detection signal for constant-voltage servo
11	WBI	I	ADIP wobble signal
12	VDD1	–	Digital power supply
13	DGND	–	Digital GND
14	TEST0	I	Test-use input; normally connected to GND when used.
15	TEST1	I	
16	TEST2	I	Test-use input; Encoder/Servo Mode and ATRAC Mode changeover

No.	Name	I/O	Description
17	X176KO	O	Clock output; f = 176.4kHz (4fs)
18	FODRF	O	Focus servo forward output; PWM
19	FODRR	O	Focus servo reverse output; PWM
20	TRDRF	O	Tracking servo forward output; PWM
21	TRDRR	O	Tracking servo reverse output; PWM
22	SLDRF	O	Slide servo forward output; PWM
23	SLDRR	O	Slide servo reverse output; PWM
24	SPDRF	O	Spindle servo forward output or spindle servo output; PWM
25	SPDRR	O	Spindle servo reverse output or spindle rotation forward/reverse changeover
26	RAA3	O	Address output to external D-RAM; ADR3
27	RAA2	O	Address output to external D-RAM; ADR2
28	RAA1	O	Address output to external D-RAM; ADR1
29	RAA0	O	Address output to external D-RAM; ADR0 (LSB)
30*	RAA10	O	Address output to external D-RAM; ADR10 (MSB)
31	VDD2	–	Power supply for DRAM interface

No.	Name	I/O	Description
32 | 36	RAA4 | RAA8	O	Address output to external D-RAM; ADR4 | Address output to external D-RAM; ADR8
37	RAOEX	O	Data output enable signal output to external D-RAM
38	DGND	–	Digital GND
39	RACASX	O	Column address strobe signal output to external D-RAM
40	RAD2	I/O	External D–RAM and data input/output; D2
41	RAD3	I/O	External D-RAM and data input/output; D3 (MSB)
42	RAA9	O	Address output to external D-RAM; ADR9
43	RARASX	O	Low address strobe signal output to external D-RAM
44	RAWEX	O	Data write enable signal output to external D-RAM
45	RAD1	I/O	External D-RAM and data input/output; D1
46	RAD0	I/O	External D-RAM and data input/output; D0 (LSB)
47*	TCRS	O	Track cross signal
48*	ACRCER	O	ADIP CRC error flag monitor output
49*	PLCK	O	EFM PLL clock output during Play
50	EFM0	O	EFM signal output during Record; C1F (C1 error flag) monitor output during Play.
51*	X700KO	O	Clock output; f = 705.6kHz; clock is not output when RSTX = 0.
52*	EXPORT0	O	Microcomputer extension output port 0
53*	EXPORT1	O	Microcomputer extension output port 1
54	TESO1	O	Microcomputer extension output port 2 during PLLLR changeover
55	TEST3	I/O	Microcomputer extension output port 3 during PLLOSC changeover
56	TEST4	I/O	Microcomputer extension output port 4 during EXTCLK changeover
57	CDDATA	I/O	CD data input for high-speed dubbing; micro-computer extension port 5 during changeover
58	CDLRCK	I/O	CD LR clock input for high-speed dubbing; microcomputer extension port 6 during changeover
59	CDBCLK	I/O	CD bit clock input for high-speed dubbing; microcomputer extension port 7 during changeover
60	VXI	I	PLL clock input for varying pitch
61*	VPO	O	PLL phase error input for varying pitch
62	VDD1	–	Digital power supply
63	DGND	–	Digital GND
64	XI	I	Oscillation circuit input; 33.8688MHz
65	XO	O	

No.	Name	I/O	Description
66	DIN	I	Digital input signal
67	DOUT	O	Digital output signal
68	VDD3	–	Power supply for internal PLL
69	DGND	–	Digital GND
70	LRCK	O	Music data Lch/Rch changeover output
71	BCLK	O	Music data shift lock
72	DFCK	O	Clock for AD/DA converter digital filter; 256fs
73	ADDATA	I	Audio data input
74	DADATA	O	Audio data output
75*	FEMON	O	Focus error signal monitor output
76*	TOTMON	O	Total signal monitor output
77*	TEMON	O	Tracking error signal monitor output
78*	SBCK	I	DIN sub code readout clock; EIAJ CP-309 format
79*	SBO	O	DIN sub code serial data; EIAJ CP-309 format
80*	SBSY	O	DIN sub code block synchronization signal; EIAJ CP-309 format
81*	SFSY	O	DIN sub code frame synchronization signal; EIAJ CP-309 format
82	FOK	O	Focus OK detection signal; "0": Focus OK
83	SENSE	O	Servo status detection signal; "1": Auto Move/ Auto Jump/Auto Focus lead-in in progress
84	COUT	O	Track cross signal output
85	MCCK	O	Clock output for microcomputer; clock is output even when RSTX = 0.
86	DINTX	O	Interrupt Request output signal for system computer interface
87	VDD1	–	Digital power supply
88	DGND	–	Digital GND
89	RSTX	I	Tip reset input; reset with L (NOTE)
90	SYD0	I/O	System computer interface data bus terminal; (LSB)
91 | 96	SYD1 | SYD6	I/O	System computer interface data bus terminal
97	SYD7	I/O	System computer interface data bus terminal; (MSB)
98	SYWRX	I	System computer interface register write pulse input
99	SYRDX	I	System computer interface register read pulse input
100	SYRS	I	System computer interface register select input

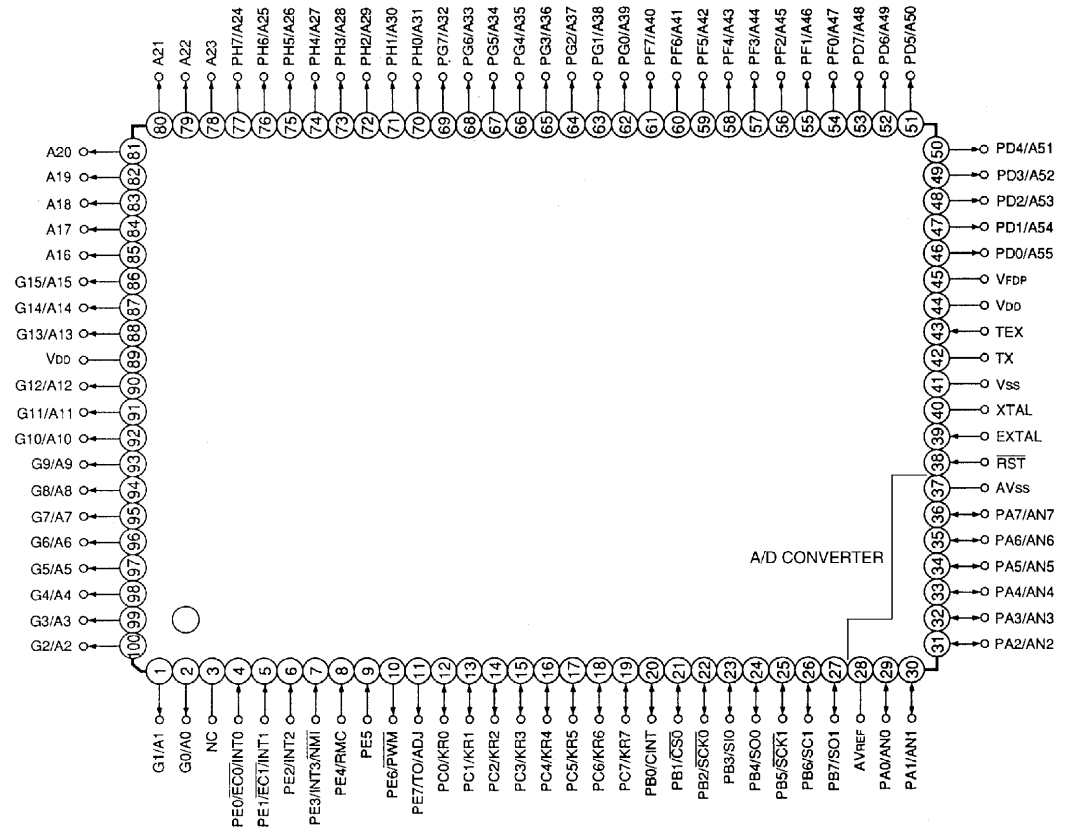
Terminals denoted with an asterisk (*) are (Open) terminals that are not externally connected.

NOTE) Set RSTX to "L" when the power is being turned ON or after it has been turned ON.

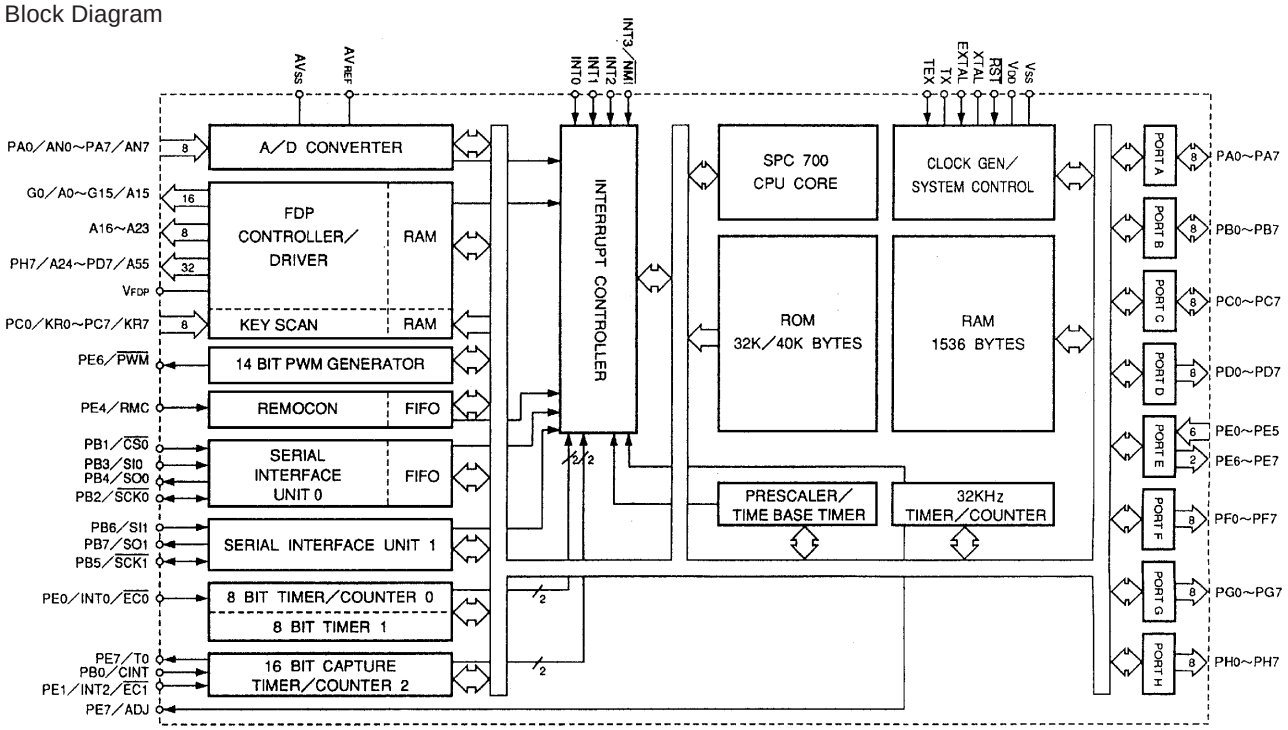
■ PDG222B (IC701: DISPLAY UNIT ASSY)

● System Control μ-com

● Pin Assignment (Top view)


A21 A22 A23 PH7/A24 PH6/A25 PH5/A26 PH4/A27 PH3/A28 PH2/A29 PH1/A30 PH0/A31 PG7/A32 PG6/A33 PG5/A34 PG4/A35 PG3/A36 PG2/A37 PG1/A38 PG0/A39 PF7/A40 PF6/A41 PF5/A42 PF4/A43 PF3/A44 PF2/A45 PF1/A46 PF0/A47 PD7/A48 PD6/A49 PD5/A50
A20 A19 A18 A17 A16 G15/A15 G14/A14 G13/A13 VDD G12/A12 G11/A11 G10/A10 G9/A9 G8/A8 G7/A7 G6/A6 G5/A5 G4/A4 G3/A3 G2/A2
PD4/A51 PD3/A52 PD2/A53 PD1/A54 PD0/A55 VFDP VDD TEX TX VSS XTAL EXTAL RST AVSS PA7/AN7 PA6/AN6 PA5/AN5 PA4/AN4 PA3/AN3 PA2/AN2
A/D CONVERTER
G1/A1 G0/A0 NC PE0/ECO/INT0 PE1/EC1/INT1 PE2/INT2 PE3/INT3/NMI PE4/RMC PE5 PE6/PWM PE7/TO/ADJ PC0/KR0 PC1/KR1 PC2/KR2 PC3/KR3 PC4/KR4 PC5/KR5 PC6/KR6 PC7/KR7 PB0/CINT PB1/CS0 PB2/SCK0 PB3/SI0 PB4/SO0 PB5/SCK1 PB6/SC1 PB7/SO1 AVREF PA0/AN0 PA1/AN1

● Block Diagram



● Pin Function

No.	Name	I/O	Description
1	G1/A1	O/O	Output terminals used jointly for the FDP timing signal (grid connection) and the segment signal (anode connection).
2	G0/A0		
3	NC	—	NC (connected to VDD)
4	PE0/INT0/$\overline{EC0}$	I/I/I	Timer/counter external event input terminal
5	PE1/INT1/$\overline{EC1}$		
6	PE2/INT2	I/I	External interrupt request input terminal
7	PE3/INT3/$\overline{NMI}$	I/I/I	Nonmaskable interrupt request input terminal
8	PE4/RMC	I/I	Remote control reception circuit input terminal
9	PE5		
10	PE6/$\overline{PWM}$	O/O	14 bit PWM output terminal
11	PE7/TO/ADJ	O/O/O	16 bit timer/counter rectangular waveform output, 32 kHz oscillation division output terminal
12 | 19	PC0/KR0 | PC7/KR7	IO/I	Key return input terminal for performing of key scanning with the FDP segment signal
20	PB0/CINT	IO/I	External capture input terminal to the 16 bit timer/counter
21	PB1/$\overline{CS0}$	I	Serial interface (CH0) chip select input terminal
22	PB2/SCK0	IO/IO	Serial clock (CH0) Input/Output terminal
23	PB3/SI0	IO/I	Serial data (CH0) input terminal
24	PB4/SO0	IO/O	Serial data (CH0) output terminal
25	PB5/$\overline{SCK1}$	IO/IO	Serial clock (CH1) Input/Output terminal
26	PB6/SC1	IO/I	Serial data (CH1) input terminal
27	PB7/SO1	IO/O	Serial data (CH1) output terminal
28	AVREF	—	A/D converter reference voltage input terminal
29 | 36	PA0/AN0 | PA7/AN7	I/O	A/D converter analog input terminal
37	AVss	—	A/D converter GND terminal
38	$\overline{RST}$		System reset terminal, L: Active
39	EXTAL	I	System clock oscillation crystal connection terminal
40	XTAL	O	
41	Vss	—	GND terminal
42	TX	O	Crystal connection terminal for 32 kHz timer counter clock oscillation
43	TEX	I	
44	VDD	—	Positive power supply terminal
45	VFDP	—	FDP voltage supply terminal when the internal resistor is specified by the mask option.

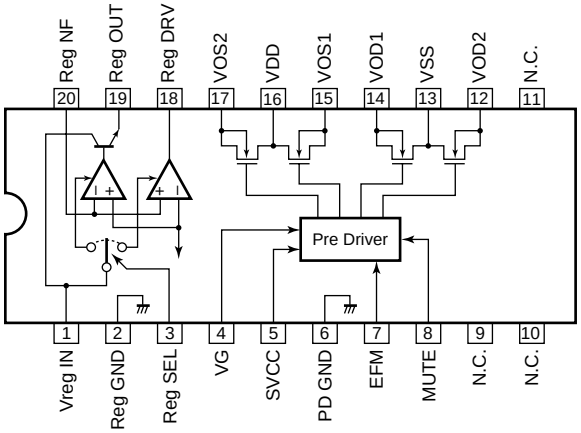
No.	Name	I/O	Description
46 | 53	PD0/A55 | PD7/A48	O/O	FDP segment signal (anode connection) output terminal
54 | 61	PF0/A47 | PF7/A40		
62 | 69	PG0/A39 | PG7/A32		
70 | 77	PH0/A31 | PH7/A24		
78 | 85	A23 | A16	O	
86 | 88	G15/A15 | G13/A13	O/O	Output terminals for FDP timing signal (grid connection) and segment signal (anode connection)
89	VDD	—	Positive power supply terminal
90 | 100	G12/A12 | G2/A2	O/O	Output terminals for FDP timing signal (grid connection) and segment signal (anode connection)

Note: The NC terminal of pin 3 must be connected to VDD. Connect the VDD terminals of pin 44 and pin 89 both to VDD.

■ BD7910FV (IC116: CORE MAIN UNIT ASSY)

● Head Driver

● Block Diagram



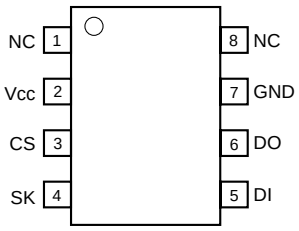
● Pin Function

No.	Name	Description
1	VregIN	Regulator input and regulator power supply
2	RegGND	Regulator GND
3	RegSEL	Regulator selection terminal
4	VG	Power MOS drive voltage input
5	SVCC	EFM high-level output voltage
6	PDGND	Predrive GND
7	EFM	EFM signal input
8	MUTE	Mute control
9	N.C.	Not used
10	N.C.	
11	N.C.	
12	VOD2	Sink output (lower side power MOS drain)
13	VSS	H-bridge GND (lower side power MOS source)
14	VOD1	Sink output (lower side power MOS drain)
15	VOS1	Source output (upper side power MOS source)
16	VDD	H-bridge power supply (upper side power MOS drain)
17	VOS2	Source output (upper side power MOS source)
18	RegDRV	External PNP drive output for the regulator
19	RegOUT	Regulator output (emitter follower output)
20	RegNF	Regulator feedback terminal

■ BR93LC56F (IC110: CORE MAIN UNIT ASSY)

● EEPROM

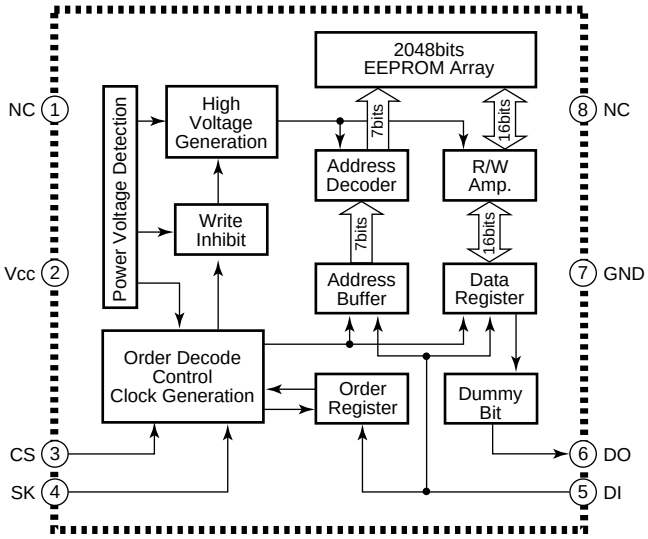
● Pin Assignment (Top view)



● Pin Function

No.	Name	Description
1	NC	Not connected
2	Vcc	Power supply
3	CS	Chip selection input
4	SK	Serial clock input
5	DI	Start bit, operation code, address, and serial data input
6	DO	Serial data output, READY/BUSY internal status indication output
7	GND	Ground
8	NC	Not connected

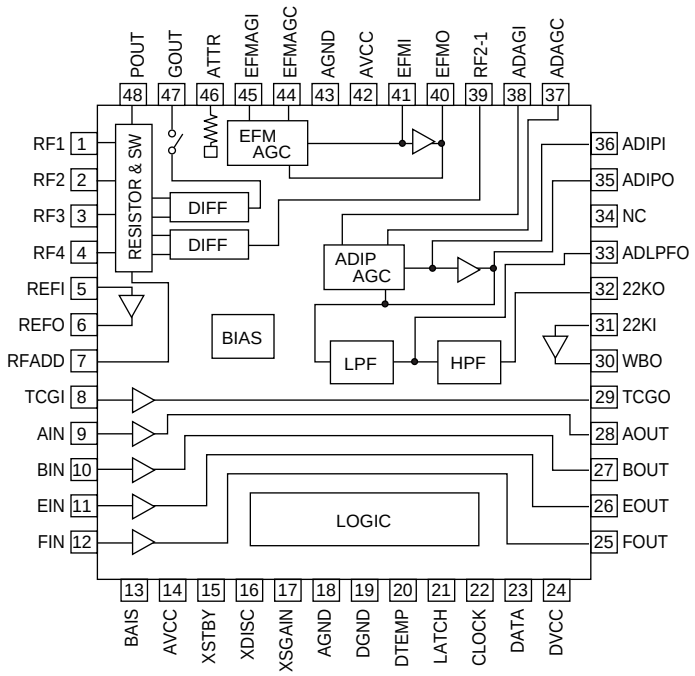
● Block Diagram



■ IR3R55M (IC101: CORE MAIN UNIT ASSY)

● RF Signal Processor

● Block Diagram



● Pin Function

No.	Name	Description
1	RF1	Inputs RF signal input terminal 1 pickup RF signal output.
2	RF2	Inputs RF signal input terminal 2 pickup RF signal output.
3	RF3	Inputs RF signal input terminal 3 pickup RF signal output.
4	RF4	Inputs RF signal input terminal 4 pickup RF signal output.
5	REFI	Standard voltage amp input terminal
6	REFO	Standard voltage amp output terminal
7	RFADD	RF1 – 4 resistance addition output terminal
8	TCGI	Track cross detection signal amp input terminal during groove input
9	AIN	Servo-use signal amp (Focus servo system) inversion input terminal
10	BIN	Servo-use signal amp (Focus servo system) inversion input terminal
11	EIN	Servo-use signal amp (Tracking servo system) inversion input terminal
12	FIN	Servo-use signal amp (Tracking servo system) inversion input terminal
13	BIAS	Bias input terminal
14	AVCC	Analog power terminal
15*	VSTBY	Logic signal output terminal (outputs STBY signal inversion signal)
16*	XDISC	Logic signal output terminal (outputs DISC signal inversion signal)
17*	XSGAIN	Logic signal output terminal (outputs SGAIN signal inversion signal)
18	AGND	Analog part GND terminal
19	DGND	Digital part GND terminal
20	DTEMP	Tip temperature detection terminal
21	LATCH	Latch signal input terminal
22	CLOCK	Clock signal input terminal
23	DATA	Serial data input terminal
24	DVCC	Digital part power terminal
25	FOUT	Servo-use signal amp (Tracking servo system) output terminal
26	EOUT	Servo-use signal amp (Tracking servo system) output terminal
27	BOUT	Servo-use signal amp (Focus servo system) output terminal
28	AOUT	Servo-use signal amp (Focus servo system) output terminal
29	TCGO	Track cross detection signal amp output terminal during groove output
30	WBO	Comparator output terminal for ADIP signal 2-value conversion
31	22KI	Comparator input terminal for ADIP signal 2-value conversion
32	22KO	ADIP signal HPF amp output terminal
33	ADLPFO	ADIP signal LPF amp output terminal
34*	NC	NC
35	ADIPO	ADIP signal preamp output terminal
36	ADIPI	ADIP signal AGC amp output terminal
37	ADAGC	Smoothing capacitor connection terminal for ADIP signal AGC
38	ADAGI	ADIP signal AGC amp input terminal
39	RF2–1	RF1, RF2 differential signal
40	EFMO	RF signal preamp output terminal
41*	EFMI	RF signal AGC amp output terminal
42	AVCC	Analog part power terminal
43	AGND	Analog part GND terminal
44	EFMAGC	Smoothing capacitor connection terminal for EFM signal AGC
45	EFMAGI	EFM signal AGC amp input terminal
46*	ATTR	Terminal for attenuating 47, 48 pin output signal
47	GOUT	Outputs RF1 + RF2 + RF3 – RF3 – RF4 signal during groove output
48	POUT	RF1 – 4 resistance addition output during pit output

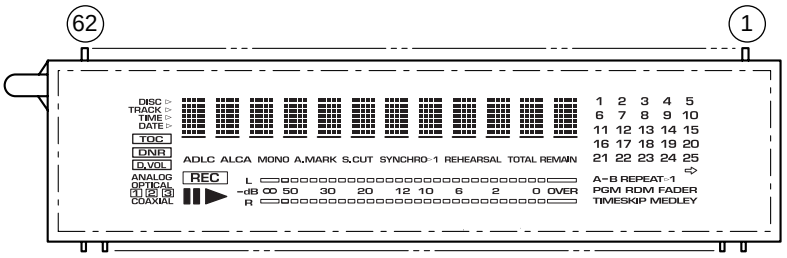
Terminals denoted with an asterisk (*) are (Open) terminals that are not externally connected.

7.1.2 DISPLAY

■ RAW1164 (V701: DISPLAY UNIT ASSY)

● Vacuum Fluorescent Display

● Pin Assignment

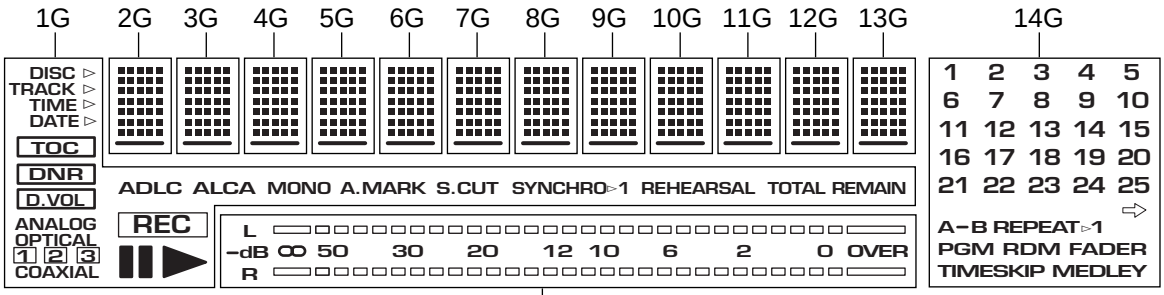


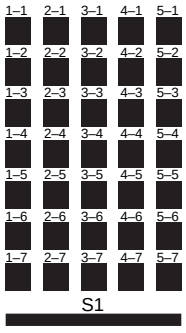
NOTE 1) F1,F2 --- Filament
2) NP ------- No Pin
3) NX ------- No extend Pin
4) DL ------- Datum Line
5) 1G~15G --- Grid

● Pin Connection

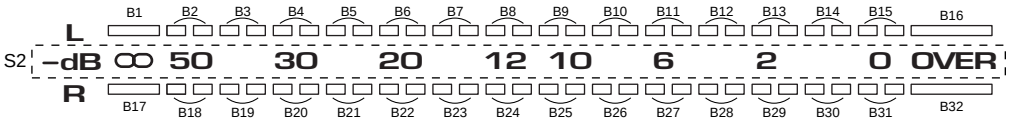
PIN NO.	62 61 60 59 58 57 56 55 54 53 52 51 50 49 48 47 46 45 44 43 42 41 40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1
CONNECTION	F2 F1 NP NX P36 P35 P34 P33 P32 P31 P30 P29 P28 P27 P26 P25 P24 P23 P22 P21 P20 P19 P18 P17 P16 P15 P14 P13 P12 P11 P10 P9 P8 P7 P6 P5 P4 P3 P2 P1 1G 2G 3G 4G 5G 6G 7G 8G 9G 10G 11G 12G 13G 14G 15G F1 F2

● Grid Assignment





(2G–13G)



(15G)

● Anode Connection

	1G	2G–13G	14G	15G
P1	DISC ▷	1–1	1	B1
P2	TRACK ▷	2–1	2	B2
P3	TIME ▷	3–1	3	B3
P4	DATE ▷	4–1	4	B4
P5	TOC	5–1	5	B5
P6	DNR	1–2	6	B6

	1G	2G–13G	14G	15G
P7	D.VOL	2–2	7	B7
P8	ANALOG	3–2	8	B8
P9	OPTICAL	4–2	9	B9
P10	1	5–2	10	B10
P11	2	1–3	11	B11
P12	3	2–3	12	B12
P13	COAXIAL	3–3	13	B13
P14	ADLC	4–3	14	B14
P15	REC	5–3	15	B15
P16	▮▮	1–4	16	B16

	1G	2G–13G	14G	15G
P17	▶	2–4	17	B17
P18	ALCA	3–4	18	B18
P19	MONO	4–4	19	B19
P20	A.MARK	5–4	20	B20
P21	S.CUT	1–5	21	B21
P22	SYNCHRO	2–5	22	B22
P23	▷1	3–5	23	B23
P24	REHEARSAL	4–5	24	B24
P25	TOTAL	5–5	25	B25
P26	REMAIN	1–6	⇨	B26

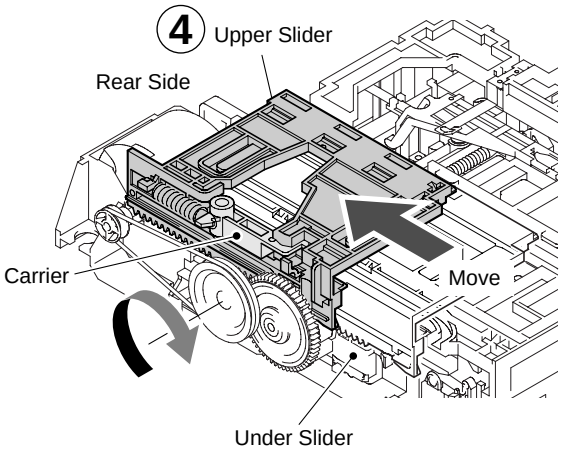
	1G	2G–13G	14G	15G
P27	—	2–6	A–	B27
P28	—	3–6	B	B28
P29	—	4–6	REPEAT	B29
P30	—	5–6	▷1	B30
P31	—	1–7	PGM	B31
P32	—	2–7	RDM	B32
P33	—	3–7	FADER	L R
P34	—	4–7	TIME SKIP	S2
P35	—	5–7	MEDLEY	—
P36	—	S1	—	—

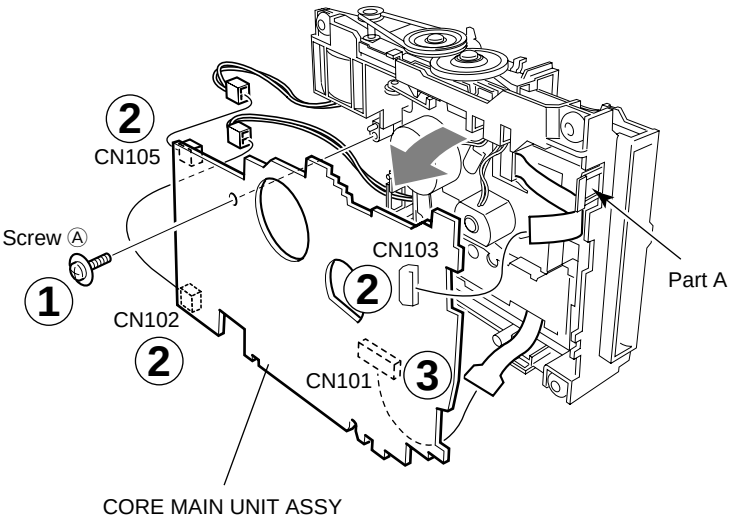
7.2 DIAGNOSIS

7.2.1 DISASSEMBLY

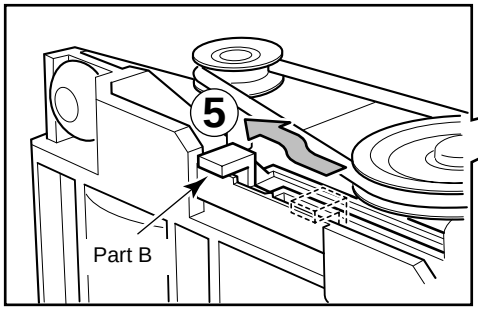
■ Removal of the Servo Mechanism Assy

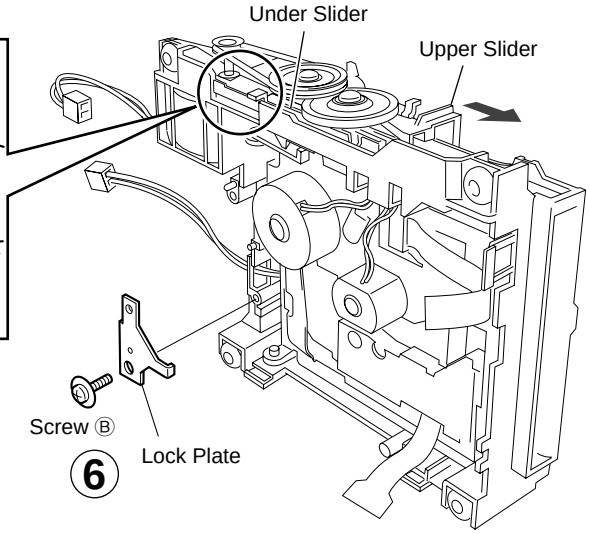
① Remove the screw Ⓐ.
② Disconnect the connectors (CN102, CN103, CN105), open the hook of part A, and tilt the upper side of the CORE MAIN UNIT ASSY to the front.
③ Disconnect the connector (CN101) at the rear of the CORE MAIN UNIT ASSY and remove the CORE MAIN UNIT ASSY.
④ After the Carrier has been pushed in, move the Upper Slider to the rear and stop it at the position where the Under Slider starts to move.



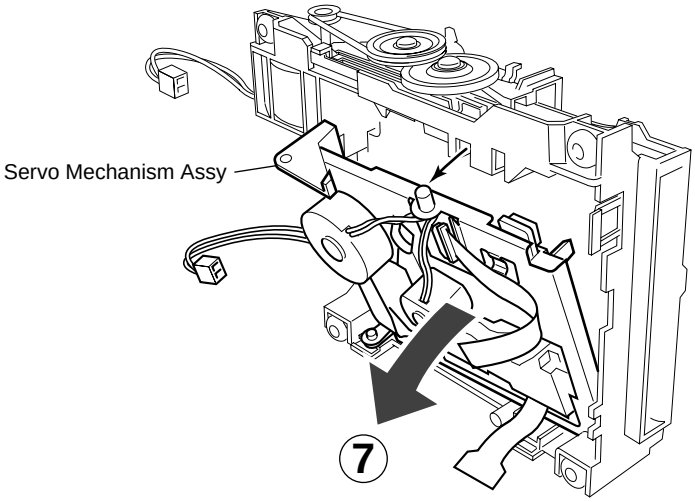


⑤ Shift part B to the position shown in the figure while raising the Under Slider. (At the same time, the Upper Slider moves to the front.)
⑥ Remove the Lock Plate. (One screw Ⓑ)





⑦ Remove the Servo Mechanism Assy.

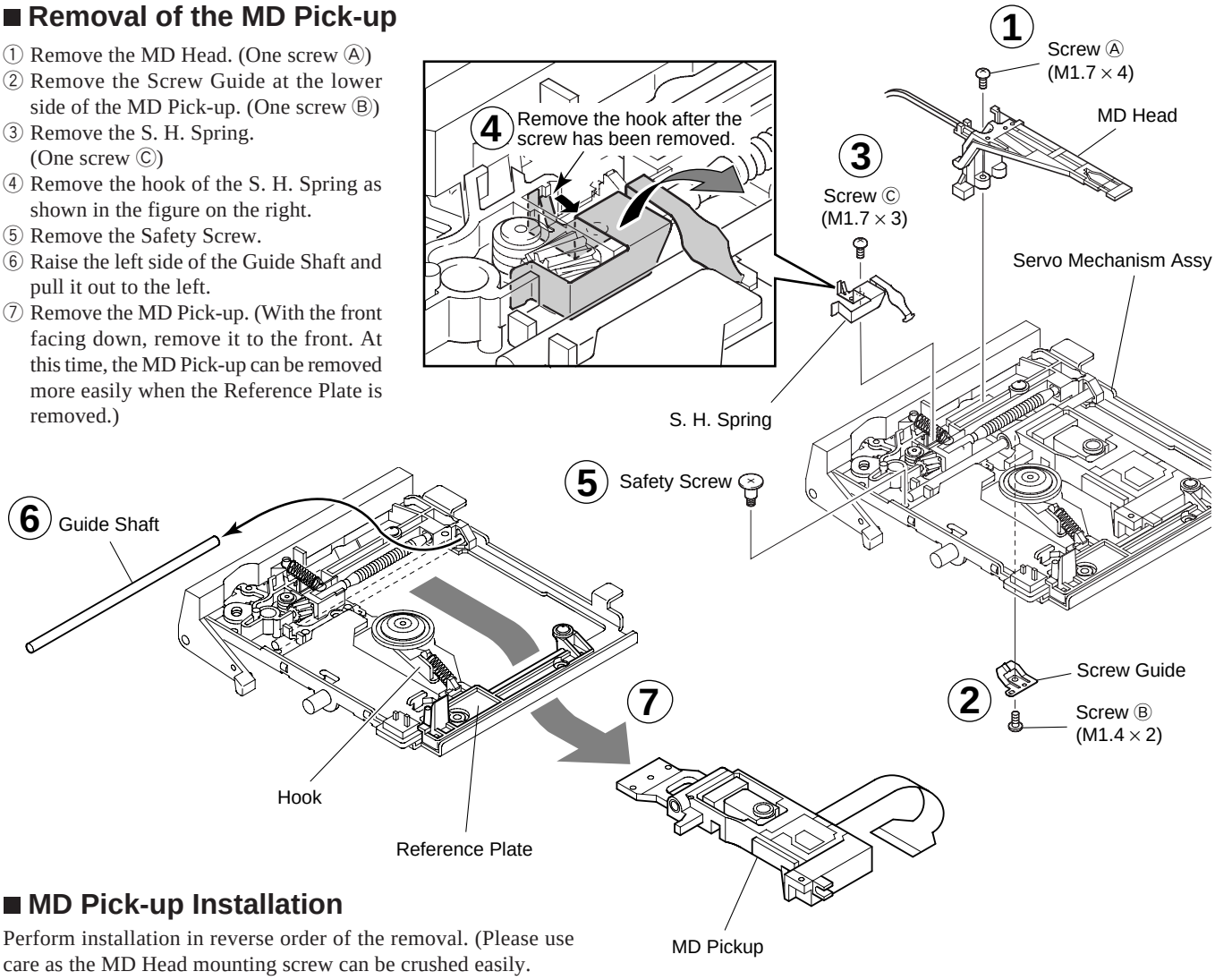


■ Caution for the time of installation of the servo mechanism assy

Move the MD Pick-up to the innermost circumference.
After installation of the servo mechanism assembly, shift the Upper Slider to the rear. (The Under Slider moves at the same time, and the servo mechanism assy is fixed. When the Under Slider is slide, this becomes the reason for switching ring catching.)

■ Removal of the MD Pick-up

① Remove the MD Head. (One screw Ⓐ)
② Remove the Screw Guide at the lower side of the MD Pick-up. (One screw Ⓑ)
③ Remove the S. H. Spring. (One screw Ⓒ)
④ Remove the hook of the S. H. Spring as shown in the figure on the right.
⑤ Remove the Safety Screw.
⑥ Raise the left side of the Guide Shaft and pull it out to the left.
⑦ Remove the MD Pick-up. (With the front facing down, remove it to the front. At this time, the MD Pick-up can be removed more easily when the Reference Plate is removed.)

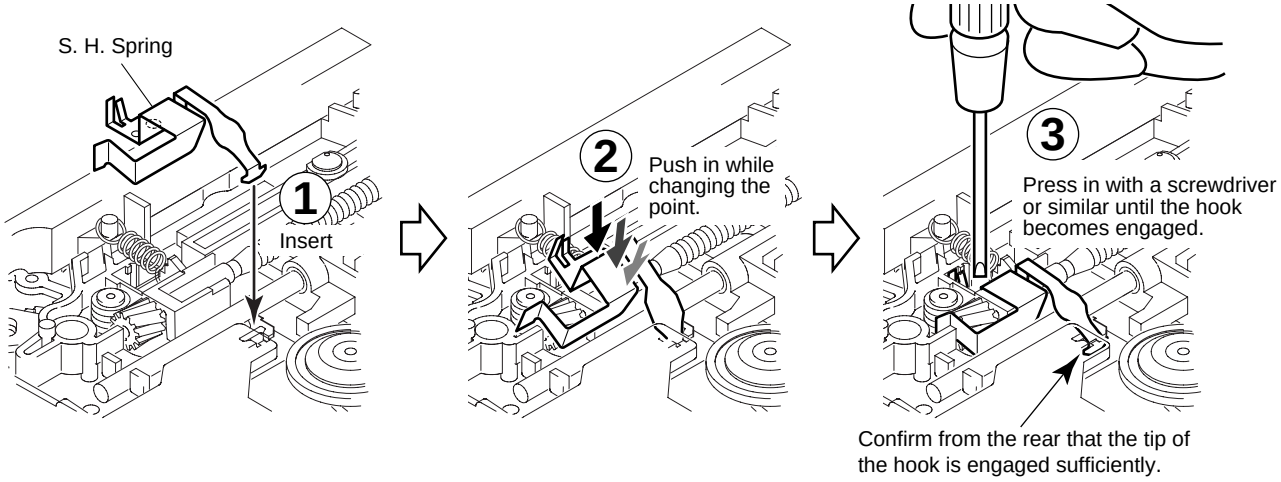


■ MD Pick-up Installation

Perform installation in reverse order of the removal. (Please use care as the MD Head mounting screw can be crushed easily.
MD Head mounting screw tightening torque: 0.8 kg • cm

When the Reference Plate has been removed, confirm that the hook is engaged with the shaft of the spindle motor. (Take care that the mounting reference boss does not ride up.)

■ S. H. Spring Installation

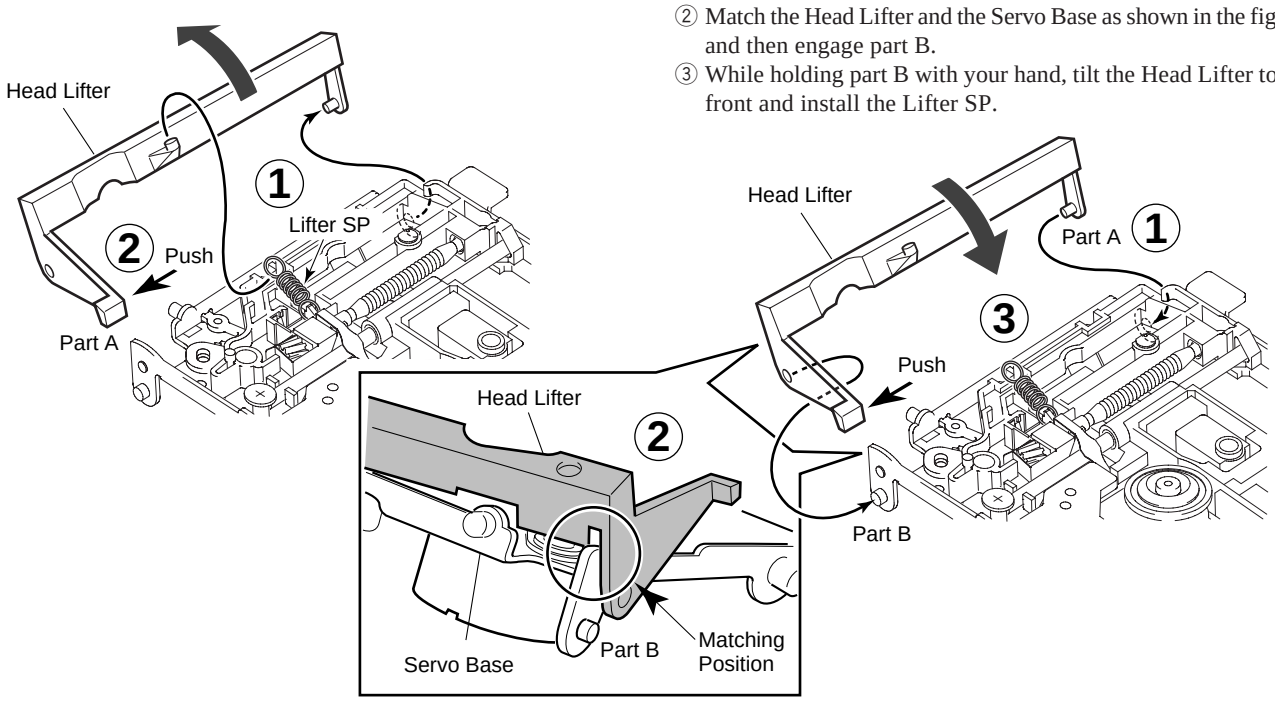

S. H. Spring
1
Insert
2
Push in while changing the point.
3
Press in with a screwdriver or similar until the hook becomes engaged.
Confirm from the rear that the tip of the hook is engaged sufficiently.

■ Removal of the Head Lifter

① Remove the Lifter SP.
② Tilt the Head Lifter to the rear and push part A to disengage it.

■ Head Lifter Installation

① Install part A in the Servo Base with the Head Lifter tilted to the back.
② Match the Head Lifter and the Servo Base as shown in the figure, and then engage part B.
③ While holding part B with your hand, tilt the Head Lifter to the front and install the Lifter SP.



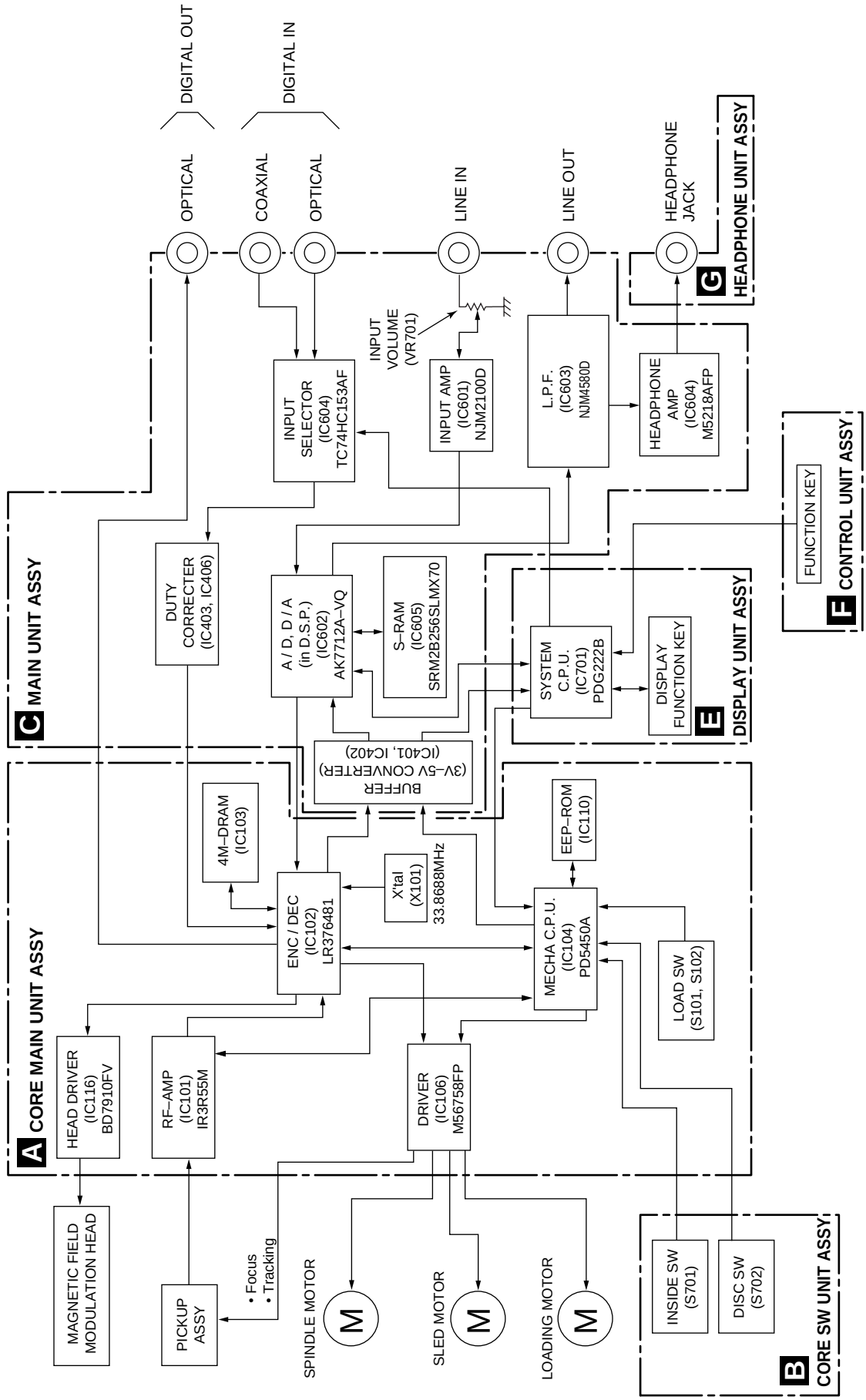
7.2.2 DETAILS OF ERROR DISPLAY

Error Display	Details of Error	Measure
Can't REC	● DEFECT occurred 10 times continuously during REC-PLAY. ● Recordable cluster became 0 since DEFECT occurred during REC-PLAY. ● Address is unreadable. REC state can not be set for 20 seconds even after try again.	● Check if there are scratches, dusts, fingerprints, or black spots on disc. Check if disc fluctuates eccentrically or moves up and down largely.
Can't COPY	● Determined as follows according to the channel status of the signals input from D-IN during REC-PAUSE or REC-PLAY. 1. Other than audio 2. Other than consumer use 3. Copy NG due to inversion of COPY bit of CD	● Check if CD is copy-proof. (Example: CD-R, etc.)
D-IN UNLOCK	● The following occurred for digital signal input from D-IN during REC-PAUSE, REC-PLAY, or CD FUNC playback 1. Digital IN PLL unlocked. 2. Locked at other than FS = 32, 44.1 and 48 kHz.	● Check if D-IN signal line is normal.
TOC FULL	● No area for registering music number and character information during REC-PLAY (music name, disc number, etc.)	● Replace with recording/playback disc with space for registering UTOC.
UTOC R ERROR	● FTNO > LTNO. ● FTNO ≠ 0 or 1. ● UTOC recorded on DISC could not be read.	● Replace with other discs to check if UTOC data is normal.
UTOC ERR A	● Start address > End address.	● Replace with other discs to check if UTOC data is normal.
UTOC ERR L	● Any one data of UTOC 0 to 4 has looped.	● Replace with other discs to check if UTOC data is normal.

7.2.2 Details of Error Display

Error Display	Details of Error	Measure
NOT AUDIO	● Data not for audio is recorded for TNO track mode currently selected.	● Select other TNO or replace with other discs.
UNKNOWN DISC	● Data called MINI of system ID written in ASCII codes in TOC is incorrect. ● Disc type written in TOC is not pre-mastered MD, recording MD, or hybrid MD.	● Disc is outside specifications. Replace with different disc and check.
DISC FULL	● No recordable space when attempted to set REC-PAUSE.	● Replace with different disc with recording space.
PREMASTERED	● Disc only for playback was loaded when attempted to set REC-PAUSE or edit.	● Disc is for playback only. Replace with disc for recording.
PROTECTED	● Attempted to record or edit even through REC-proof knob of disc for recording was in the REC-proof state. ● Attempted to edit track with write-protect according to information on UTOC.	● Track attempted to be edited is write-protected. Try again with different track. ● Restore the REC-proof knob and try again.
Can' t EDIT	● Editing conditions were not satisfied for each editing function.	● Operating method is wrong. Try again using correct method.
TEMP OVER	● Temperature inside unit (MD unit) was too high due to fault.	● Check according to TROUBLESHOOTING.
DISC ERR [DISC ERR R DISC ERR S DISC ERR W]	● Data read was incorrect or could not be read properly. ● Error occurred during music data recording and recording could not be performed correctly. ● Music data READ search time exceeded ● REC PAUSE shift abnormality (search time exceeded) ● SD WRITE (search time exceeded)	● Faulty TOC or UTOC data or scratch on disc. Replaced with other discs.
UNKNOWN DISC	● TOC read was incorrect or could not be read properly.	● The TOC data recorded on the disc do not comply with MD Standards, so try using another disc. ● The disc may be scratched or damaged, so try using another disc.
UTOC W ERR	● Fault occurred during rewriting of UTOC rewriting, and rewriting could not be performed correctly.	● Scratch on disc. Replaced with other discs.
UNKNOWN DISC	● Inserted a disc but could not bring in FOCUS.	● Check if there are scratches, dusts, fingerprints, or black spots on disc. Check if disc fluctuates eccentrically or moves up and down largely.
MEMORY FULL	● The DRAM has become filled with music data, but they can not be written (to the disc).	● Check if there are scratches, dusts, fingerprints, or black spots on disc. Check if disc fluctuates eccentrically or moves up and down largely.
BLANK MD	● After reading UTOC, total number of TNO and NAME characters was 0.	● Record and check if disc is recordable.
DEFECT	● Focus execution error, etc. occurred due to shock during REC-PLAY.	● Check if there are scratches, dusts, fingerprints, or black spots on disc. Check if disc fluctuates eccentrically or moves up and down largely.
UTOC W ERROR	● UTOC read was correct but could not be rewrite it.	● Check to see if the recording head contact is correct or if there are any disconnections between the board and the recording head.
EEPROM ERROR	● The EEPROM data are incorrect.	● Try doing a RESET operation again. If the problem still persists, replace the EEPROM.
MECHA ERROR	● Never completes EJECT. ● Never moves HEAD UP. ● Never moves HEAD DOWN. ● The set microcomputer and MD mechanism microcomputer are not communicating properly.	

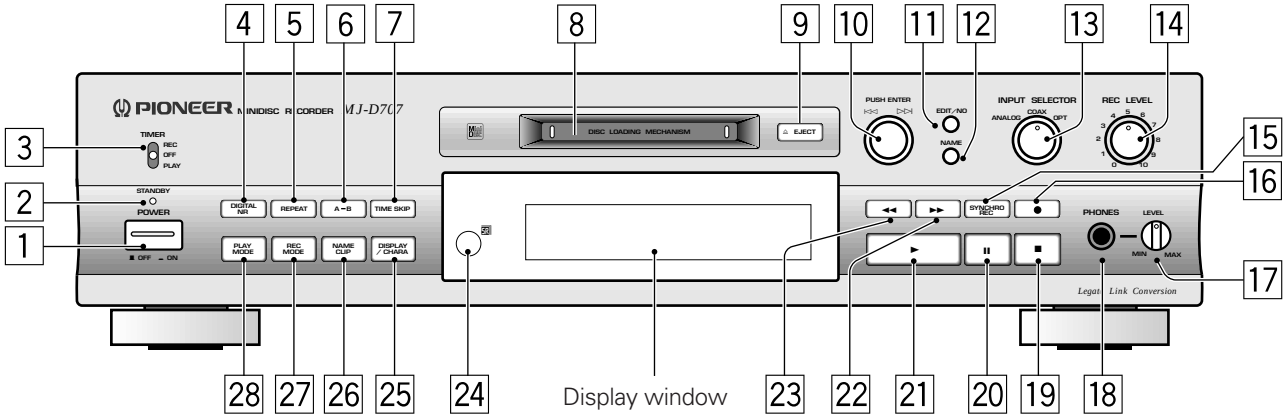
7.3 BLOCK DIAGRAM



8. PANEL FACILITIES AND SPECIFICATIONS

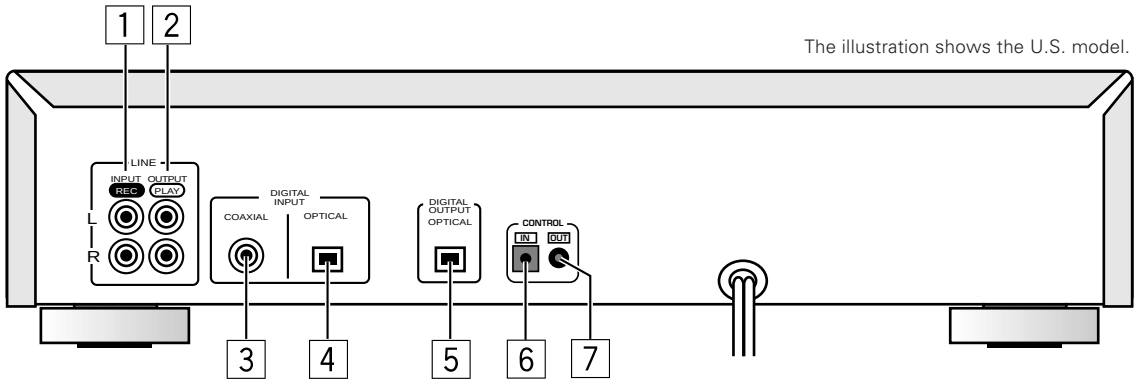
■ PANEL FACILITIES

Main unit front panel



1 POWER switch
2 STANDBY indicator
3 TIMER switch
4 DIGITAL NR button
5 REPEAT button
6 A-B button
7 TIME SKIP button
8 MD insertion slot
9 MD eject (▲) button
10 Jog dial
11 EDIT/NO button
12 NAME button
13 INPUT SELECTOR switch
14 REC LEVEL control
15 SYNCHRO REC button
16 Record (●) button
17 Headphones volume control
18 PHONES jack
19 Stop (■) button
20 Pause (❚❚) button
21 Play (►) button
22 Fast forward (►►) button
23 Fast reverse (◄◄) button
24 Remote control sensor
25 DISPLAY/CHARA button
26 NAME CLIP button
27 REC MODE button
28 PLAY MODE button

Main unit rear panel



The illustration shows the U.S. model.

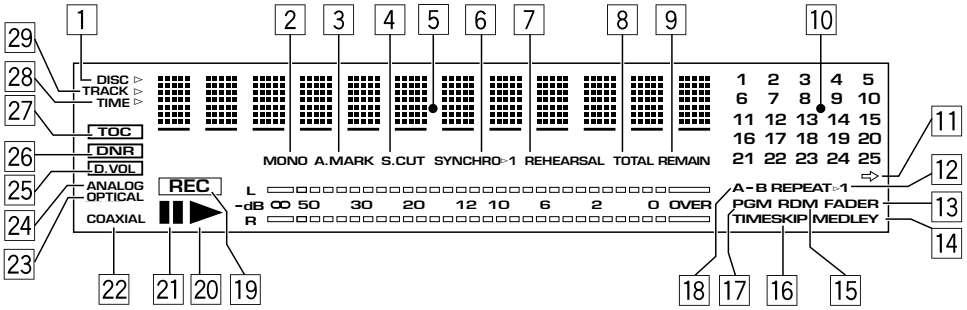
1 Audio input jacks
2 Audio output jacks
3 Digital input jack (Coaxial)
4 Digital input jack (Optical)
5 Digital output jacks (Optical)
6 Control input jack (U.S. model only)
7 Control output jack (U.S. model only)

● **To connect to equipment with the Pioneer SR mark (U.S. model only)**

Use a commercialy available miniplug cord (without load) to connect the CONTROL IN jack of this unit to the CONTROL OUT jack of equipment with the SR mark. This allows you intensified control of the system.

- When this unit is connected for systemcontrol, this unit cannot be controlled directly with the remote control unit.
- For further details, refer to the operating instructions of the equipment connected to this unit.

Display window



1 Indicate that disc data as shown in the display has been selected.
2 Indicates long-hour recording in monaural.
3 Indicates that the auto mark function is set.
4 Indicates that the space cut function is active.
5 Shows a function or disc/track name.
6 Indicates sync recording.
7 Indicates the editing setting fine-adjustment mode.
8 Indicates that the total play time of the disc is displayed.
9 Shows the remaining time for playback or recording.
10 The indicators corresponding to the track numbers existing in the disc light up.
11 Indicates that the disc has more than 26 tracks.
12 Indicates the repeat play mode.
13 Indicates the fade play mode.
14 Indicates the medley play mode.
15 Indicates the random play mode.
16 Indicates that the time skip function is active.
17 Indicates the program play mode.
18 Indicates that 2 points, A and B, have been selected to set a section.
19 Indicates the record mode.
20 Indicates the play mode.
21 Indicates the pause mode.
22 Indicates digital input recording of the coaxial input.
23 Indicates digital input recording of an optical input.
24 Indicates analog input recording.
25 Indicates that the digital volume control function is active.
26 Indicates that the digital NR function is active.
27 Indicates that recording or editing has been performed.
28 Indicates that time information is selected as shown in the display section.
29 Indicates that the track data as shown in the display has been selected.

Message Shown on the Display	Description
No Disc	No disc has been loaded.
Loading	A disc is loading.
Eject	A disc is being ejected.
Blank Disc	The loaded disc is a blank disc.
Power on	The internal mechanism is being initialized.
Disc End	The end of disc is reached during playback .
TOC Reading	The TOC data is being read.
UTOC Writing	The UTOC data is being written.
Analog	The analog input is selected with the INPUT SELECTOR switch.
Coaxial	The coaxial digital input is selected with the INPUT SELECTOR switch.
Optical	The optical digital input is selected with the INPUT SELECTOR switch.
Name Over	The number of characters would exceed 100 if a name is copied using the name clip function.
Not Clipped	Copy using the name clip function is attempted while there is no name stored in memory.
Rehearsal	The rehearsal mode for fine-adjustment of settings is selected during editing.
Complete	An editing operation has been completed successfully.
Can't Edit	An editing operation has not been completed.

■ SPECIFICATIONS

Type ..... Mini Disc digital audio system
Recording system ..... Field modulation overwrite system
Reproduce system ..... Non-contact optical readout
Sampling frequencies ..... 44.1 kHz
Frequency response ..... 8 Hz to 20 kHz
S/N ratio ..... 101 dB
Wow & flutter ..... Below measurable limit

Power requirements
U.S. model ..... AC 120 V/60 Hz
European and U.K models. ..... AC 220 - 230 V, 50/60 Hz
Power consumption ..... 15 W
Dimensions ..... 420(W) x 105(H) x 294(D) mm
(16-9/16 x 4-2/16 x 11-9/16 in)
Main unit weight ..... 3.9 kg (8 lb 9 oz)

Line input jacks ..... RCA PIN x2 ; refence input level 500mV
(input impedance 50 kΩ)
Line output jacks ..... RCA PIN x2 ; refence output level 500mV
(input impedance1 kΩ)
Headphone output jack 1.8mW
(volume max. , load impedance 32 Ω)
Coaxial input terminal ..... RCA PIN ; 0.5 Vp-p
(input impedance 75 Ω)
Optical input terminal x1
Optical output terminal x1

Accessories
Warranty card ..... x 1
Operating Instructions (this manual) ..... x 1
Audio cord ..... x 2
Remote control unit ..... x 1
batteries (AA/R6P) ..... x 2

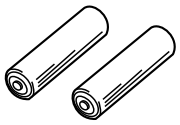
NOTE:
Specifications and design subject to possible modification without notice, due to improvements.

US and foreign patents licensed from Dolby Laboratories Licensing Corporation.

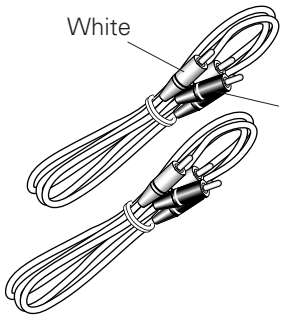
MAINTENANCE OF EXTERNAL SURFACES
- Use a polishing cloth or dry cloth to wipe off dust and dirt.
- When the surfaces are very dirty, wipe with a soft cloth dipped in some neutral cleanser diluted five or six times with water, and wrung out well, and then wipe again with a dry cloth. Do not use furniture wax or cleaners.
- Never use thinners, benzine, insecticide sprays and other chemicals on or near this unit, since these will corrode the surfaces.

Accessories

Remote control unit
CU-MJ011 (RPX1131)



Batteries (AA/R6P) x 2
(VEM–013)



Audio cord x 2
(PDE1248) (L = 1m)

Other included items
- Warranty card (ARY1044: MJ-D707/KU)
(ARY7008: MJ-D707/MY, MY/GR/FR)
(ARY1026: MJ-17D/KU)
- Operating Instructions
(RRE1162: MJ-D707/KU, MY)
(RRD1198: MJ-D707/MY, MY/GR/FR)
(RRD1199: MJ-D707/MY)
(RRB1185: MJ-17D/KU)